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INFINITY Medside Data Station

Windows 2000 Version

Service Manual

EM Guidelines, 1997-04-02

ASK-T962-03-7600

ADVISORY

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1 Introduction

In keeping with the Service Strategy for the Medside Data Station (MDS), this Service Manual provides the necessary information required to troubleshoot and service a Windows 2000 based MDS. The MDS is powered by an AC/DC power adapter, and can be placed on a desktop or attached to a wall bracket. Control of all Medside Data Station functions is done by means of a keyboard and a mouse. (It is recommended that the keyboard and mouse be purchased through SIEMENS, to avoid any possible incompatibility problems). The display screen has a 1280 x 1024 resolution capabilities which enables the user to display and run applications such as INFINITY™ Explorer and Webview.

For the purpose of clarification, special text in this Service Manual is described below:

Bold Characters	text that is to be typed in by the User.
^ Character	a space required between typed characters.
Italic Characters	a selection that is required by the User.

2 Troubleshooting

If the Medside Data Station should fail to respond properly, use the procedures below to aid in identifying and remedying the problem.

2.1 Power Problem

2.1.1 No Response when power On/Off switch toggled ON

Refer to Table 2-1 to troubleshoot Power-On problems.

Table 2-1 Power-On Problem

Conditions	Possible Cause(s)	Troubleshooting and Remedial Action
MDS connected directly to Power Adapter; Power Adapter LED not illuminated	Power source. Power Adapter malfunction. MDS Malfunction.	1) Assure Power Adapter is connected to an active hospital power source. 2) If problem persists, disconnect power adapter from MDS and measure voltage between Power Adapter output pins. • If voltage < 11.6 VDC or > 13.8 VDC, replace Power Adapter. • If voltage = 11.6 to 13.8 VDC, contact TSS in Solna or Danvers.
MDS directly connected to Power Adapter; Power Adapter LED On, MDS charger LED not illuminated.	Power Adapter malfunction. MDS Power Switch MDS malfunction.	1) Disconnect power adapter from MDS and measure voltage between Power Adapter output pins. • If voltage < 11.6 VDC or > 13.8 VDC, replace power adapter. • If voltage = 11.6 to 13.8 VDC, contact TSS in Solna or Danvers.
MDS directly connected to Power Adapter; MDS Charger LED illuminated. No Power On LED.	MDS Power Switch malfunction. MDS malfunction.	1) Switch MDS Power to On. 2) If MDS fails to Power-up, contact TSS in Solna or Danvers.

Table 2-1 Power-On Problem (Continued)

Conditions	Possible Cause(s)	Troubleshooting and Remedial Action
MDS not connected to A/C Power Adapter; Power switch On, Power LED not illuminated.	Internal UPS Battery discharged. Replace Internal battery. MDS malfunction	1) Connect MDS to A/C Power Adapter. 2) Switch MDS Power switch to On and verify that battery charger LED illuminates. Note: If Power On LED fails to illuminate, contact TSS in Solna or Danvers. 3) If battery charger LED fails to illuminate, leave power adapter connected to MDS for ≈ 1hr. 4) After 1 hr. disconnect MDS from Power Adapter and switch MDS Power On/Off switch Off, and then On. • If Power LED is green, reconnect MDS to Power Adapter and leave MDS connected an additional 8 hours to charge internal battery. • If Power LED is not green, replace Internal batteries. 5) If problem still persists, contact TSS in Solna or Danvers.

2.1.2 Power On/Off Piezo Tone Fails to Sound.

Table 2-2 Power-off Alarm Malfunction

Symptom(s)	Possible Cause(s)	Troubleshooting and Remedial Action
Piezo tone fails to sound when MDS powered On, if MDS loses power, or when MDS is powered-Off.	Speaker. MDS malfunction.	Contact TSS in Solna or Danvers.

2.1.3 Power-Up Sequence Fails to Complete Properly

Table 2-3 Power-up Process Malfunction

Symptom(s)	Possible Cause(s)	Troubleshooting and Remedial Action
Power inputs OK, but MDS fails to complete boot up.	BIOS failure. Software program corrupted. Hard Drive failure. MDS malfunction.	1) If MDS displays error message proceed to "Appendix B: BIOS Messages" on page 51, and "Appendix C: POST Error Codes" on page 55 to identify failure. 2) Check BIOS configuration according to Section 2.2. 3) If BIOS configuration OK, reinstall Windows™ 2000 according to Section 8 starting on page 14. 4) If problem still persists, contact TSS in Solna or Danvers.

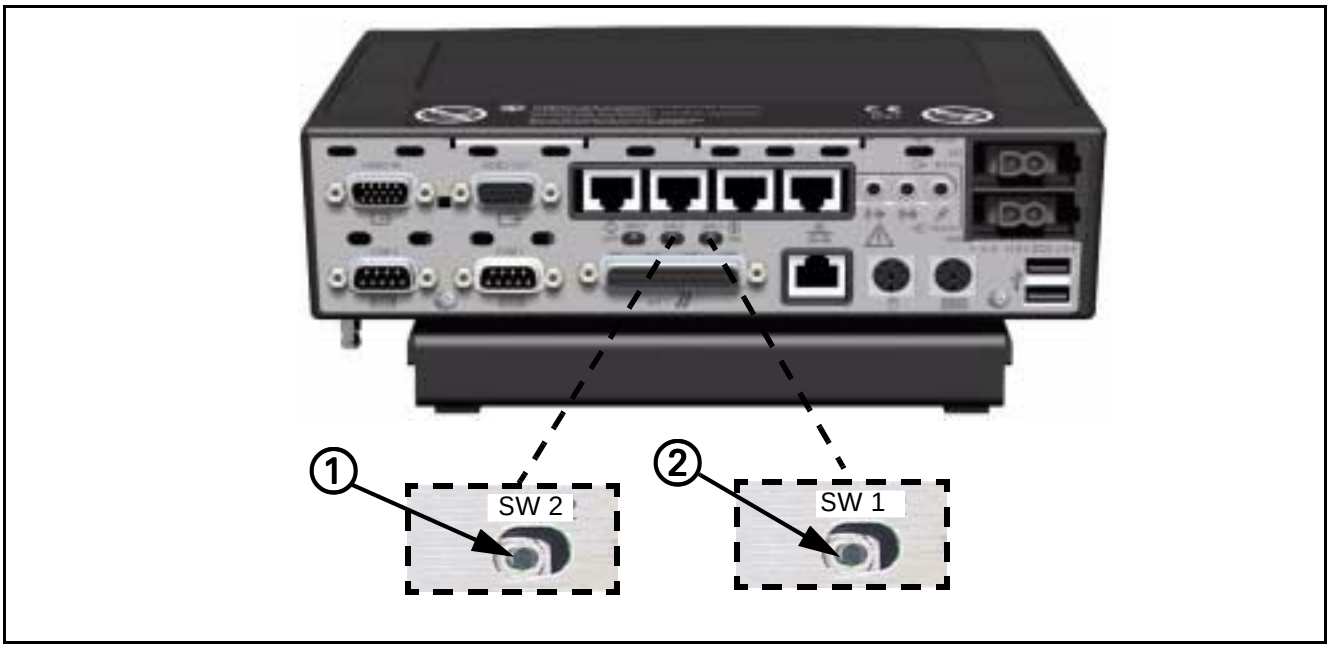

Figure 2-1 MDS switch settings

2.1.4 No Video display

Table 2-4 Video malfunction

Symptom(s)	Possible Cause(s)	Troubleshooting and Remedial Action
MDS power LED On. No video on LCD/CRT Display.	Cable problem. No power to Display. Bad display. Video switch set incorrectly. MDS malfunction.	1) Check both ends of video cable and ensure cable is connected. 2) If problem persists, verify power source to display. 3) If problem persists, switch out display with a known good display. 4) If problem persists, verify MDS video switch position (see ① in Figure 2-1) at rear of MDS is set to right. 5) If problem still persists, contact TSS Danvers/Solna.

2.1.5 MDS Fails to boot properly

Table 2-5 Power On/MDS Malfunction

Symptom(s)	Possible Cause(s)	Troubleshooting and Remedial Action
MDS power LED On. MDS Resets after successful boot.	Watchdog timer switch set incorrectly. BIOS problem. MDS malfunction	1) Verify Watchdog timer switch position (see ② in Figure 2-1) at rear of MDS is set to left. 2) If problem persists, check BIOS configuration as described in Section 2.2. 3) If problem still persists, contact TSS Danvers/Solna.

2.2 BIOS Setup

The MDS is configured at the factory for default settings that provide proper operation. Use the following procedure to check MDS BIOS setup, if MDS does not boot to Windows 2000 logon screen. Changing BIOS settings is not necessary on a new MDS, unless system failure occurs.

1) Switch MDS Power On/Off switch to On.

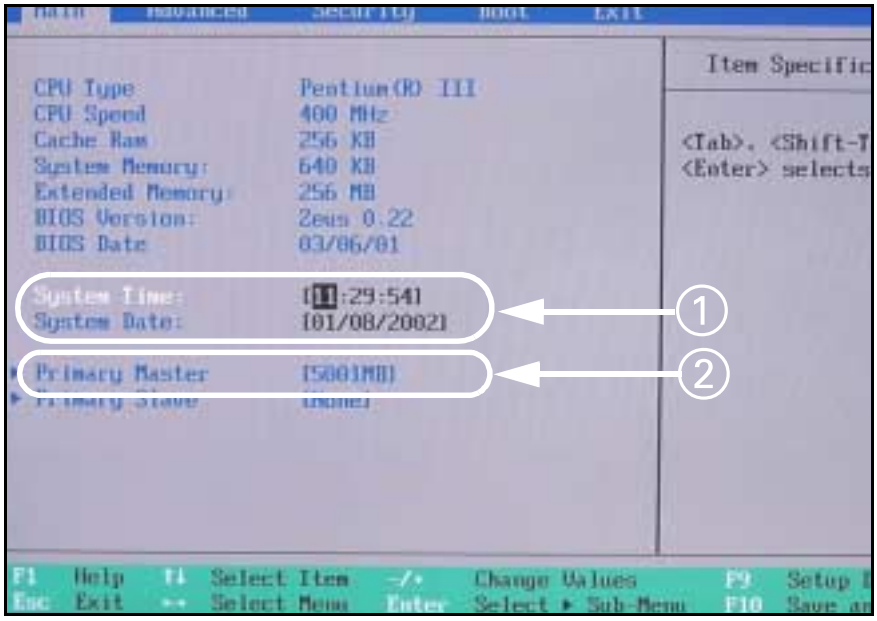

Figure 2-2 Main screen

2) Press and hold *F2* key to gain access to PhoenixBIOS Setup Utility.

3) Press *F9 key*, then press <Enter> to load default BIOS configuration settings.

4) Press *F10 key*, then press <Enter> to save configuration settings.

   Note: After <Enter> key is pressed, MDS will reboot.

5) Verify that MDS boots to Windows 2000 logon screen. If MDS does not boot to Window 2000 logon screen, proceed to step 6.

6) Toggle MDS On/Off power switch Off, and then On to reboot MDS.

7) Press and hold *F2* key to gain access to PhoenixBIOS Setup Utility.

8) Enter correct date/time (① in Figure 2-2) for clinical site, using arrow/number keys.

9) Verify correct "Primary Master" settings as shown in (② in Figure 2-2).

   Note: If Primary Master is incorrect, use up/down arrow keys to select Primary Master, and then press <*Enter*> key.

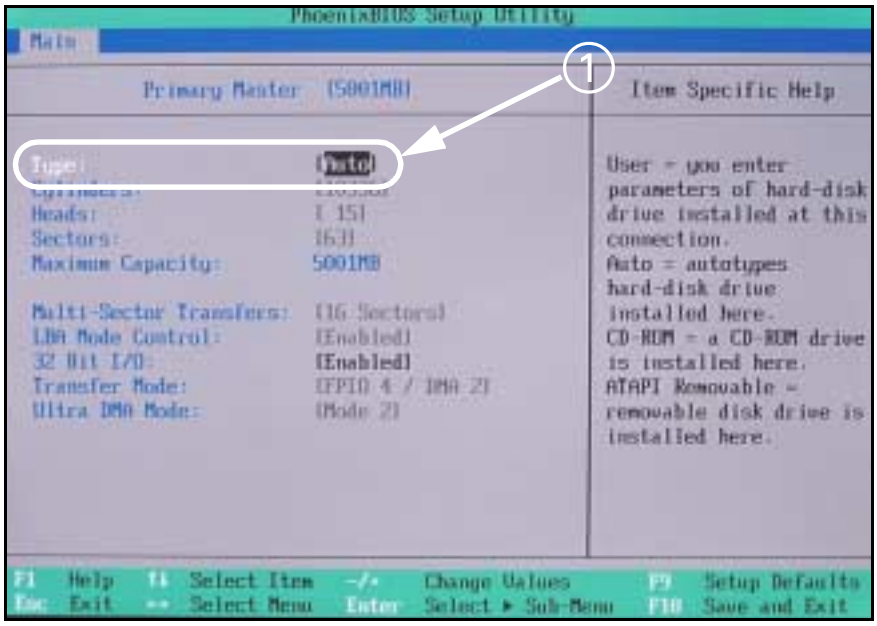
PhoenixBIOS Setup Utility
Main
Primary Master (5001MB)
Item Specific Help
Type: [Auto]
Heads: [15]
Sectors: [63]
Maximum Capacity: 5001MB
Multi-Sector Transfers: [16 Sectors]
LBA Mode Control: [Enabled]
32 Bit I/O: [Enabled]
Transfer Mode: [PIO 4 / DMA 2]
Ultra DMA Mode: [Mode 2]
User - you enter parameters of hard-disk drive installed at this connection.
Auto - autotypes hard-disk drive installed here.
CD-ROM - a CD-ROM drive is installed here.
ATAPI Removable - removable disk drive is installed here.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit
1

Figure 2-3 Hard drive settings

10) Use +/- keys to select type to Auto (① in Figure 2-3).

11) Press *ESC* key to get back to "Main" tab.

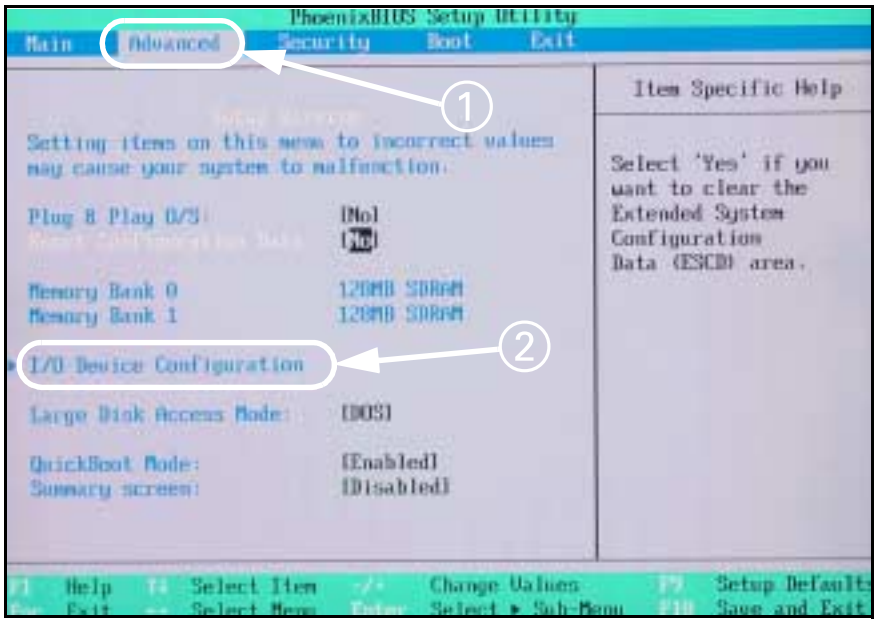
PhoenixBIOS Setup Utility
Main Advanced Security Boot Exit
Item Specific Help
Setting items on this menu to incorrect values may cause your system to malfunction.
Plug & Play O/S: [No]
Memory Bank 0 128MB SDRAM
Memory Bank 1 128MB SDRAM
I/O Device Configuration
Large Disk Access Mode: [DOS]
QuickBoot Mode: [Enabled]
Summary screen: [Disabled]
Select 'Yes' if you want to clear the Extended System Configuration Data (ESCD) area.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit
1
2

Figure 2-4 Advanced settings

12) Use left/right arrow keys to select "Advanced" tab (① in Figure 2-4).

13) Verify correct "Advanced" settings as shown in Figure 2-4.

Note: If changes need to be made use up/down arrow keys.

14) Use up/down arrow keys to select I/O Configuration (② in Figure 2-4), and then press <*Enter*> key.

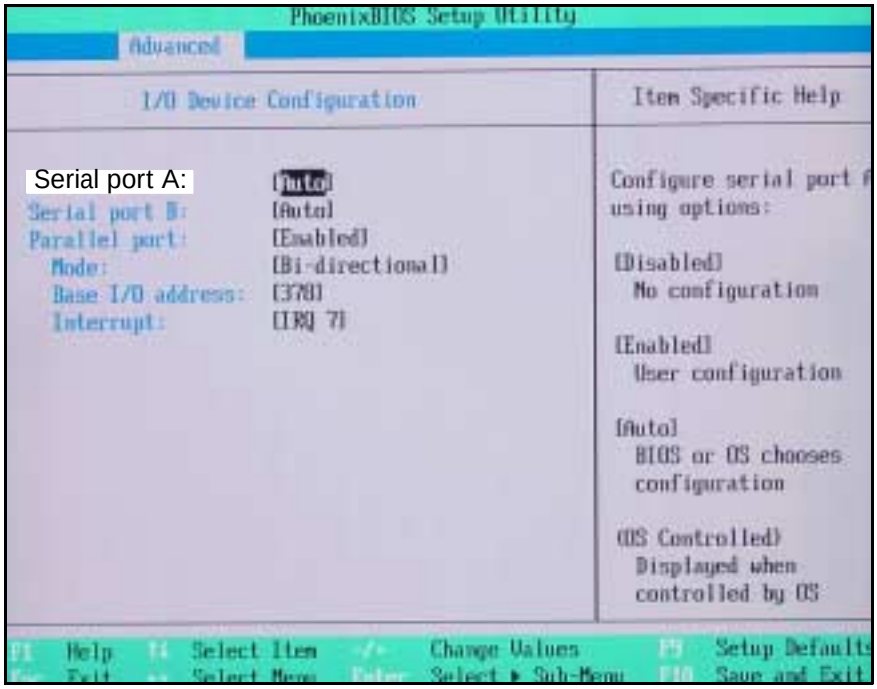

Figure 2-5 I/O Device configuration

15) Verify correct "I/O Device Configuration" settings as shown in Figure 2-5.

Note: Use left/right arrow and +/- keys to make changes.

16) Press *ESC* key to return to main menu.

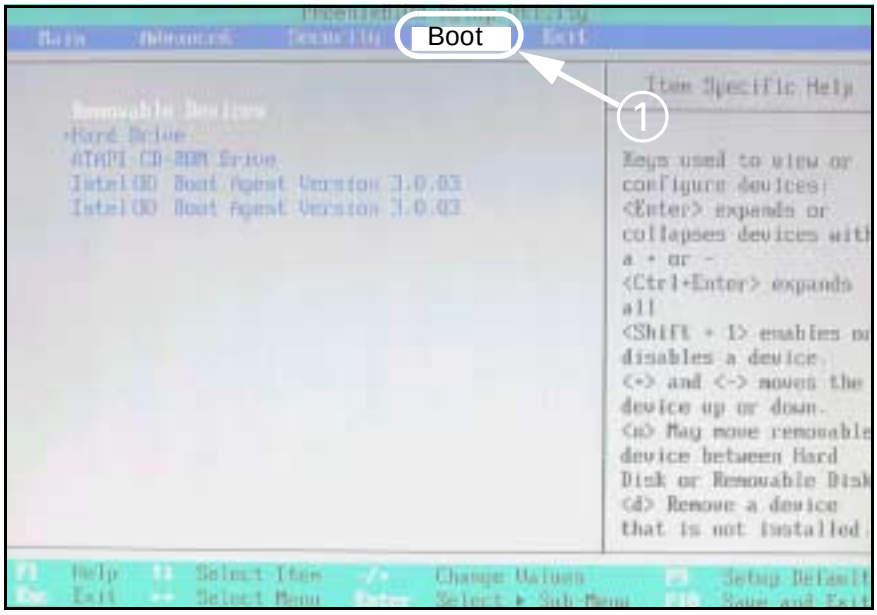

Figure 2-6 Boot settings

17) Use up/down arrow keys to select "Boot" tab (① in Figure 2-6).

18) Verify correct "Boot" order as shown in Figure 2-6.

Note: Use left/right arrow and +/- keys to make changes.

19) Press *F10* key, and then press <*Enter*> to save configuration settings.

Note: After <Enter> key is pressed, MDS reboots.

20) Verify that Windows 2000 logon screen appears.

21) If MDS fails to boot to Windows 2000 logon screen, proceed to Section 9 to Phlash BIOS.

22) If Phlash BIOS setup procedure does not boot to Windows 2000 logon screen, proceed to Section 8 and re-install Windows 2000. If problem still exists, contact TSS in Danvers/Solna.

3 MDS Installation Overview

Install the Medside Data Station in a location that has good air circulation and is reasonably free from dust, extreme temperatures, and humidity. The MDS and the devices for the MDS are not intended for use in the same room with magnetic resonance equipment. Make sure a hospital grade power outlet and ethernet terminal (if connecting to a LAN) are located near MDS.

Caution:

Do not place anything on top or bottom of Medside Data Station that can obstruct air flow to the ventilation holes on each side.

Do not place any liquid containers on MDS, to avoid possibility of a liquid spill damaging MDS.

4 MDS Hardware Installation

Do either a or b as appropriate:

a If installing an MDS on mounting arm, go on to Section 4.1.

b If installing an MDS on table top, go on to Section 4.2.

4.1 MDS Mounting Arm Installation

Refer to front cover for an illustration of a complete wall mount setup of a Medside Data Station (Flat screen display shown).

1) Secure mount to wall (see instructions included with mounting arm).

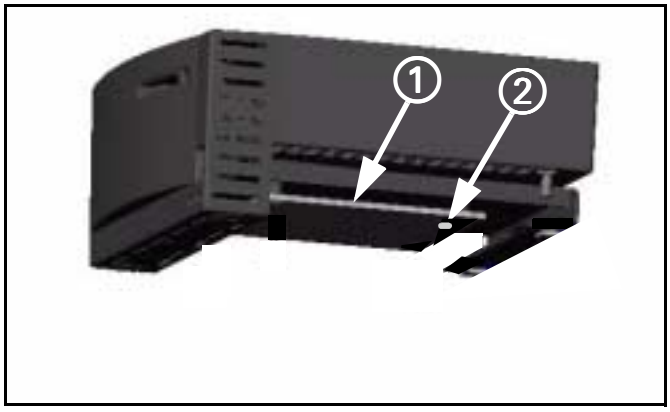

Figure 4-1 Mounting plate

2) Align mounting plate (① in Figure 4-1) on bottom of MDS to slots (① in Figure 4-2) on left side of mounting bracket.

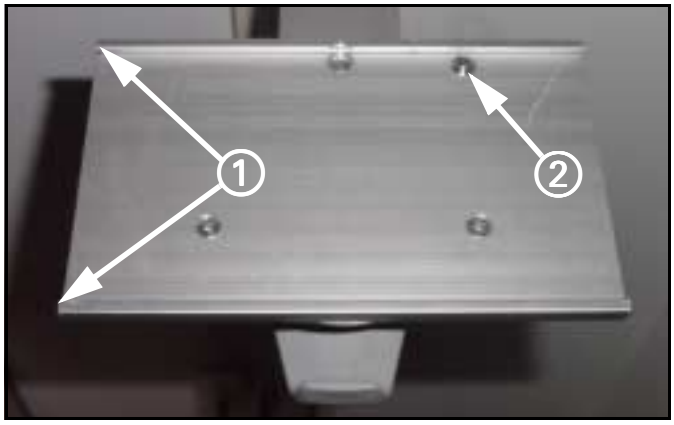

Figure 4-2 Mounting bracket

3) Pull down and hold spring loaded locking pin (② in Figure 4-2), and slide in MDS to align hole on mounting plate (② in Figure 4-1) with locking pin.

4) Release locking pin to secure mounting plate to mounting bracket.

   Note: The locking pin snaps into place when properly installed.

5) Proceed to Section 5.

4.2 MDS Table Top Installation

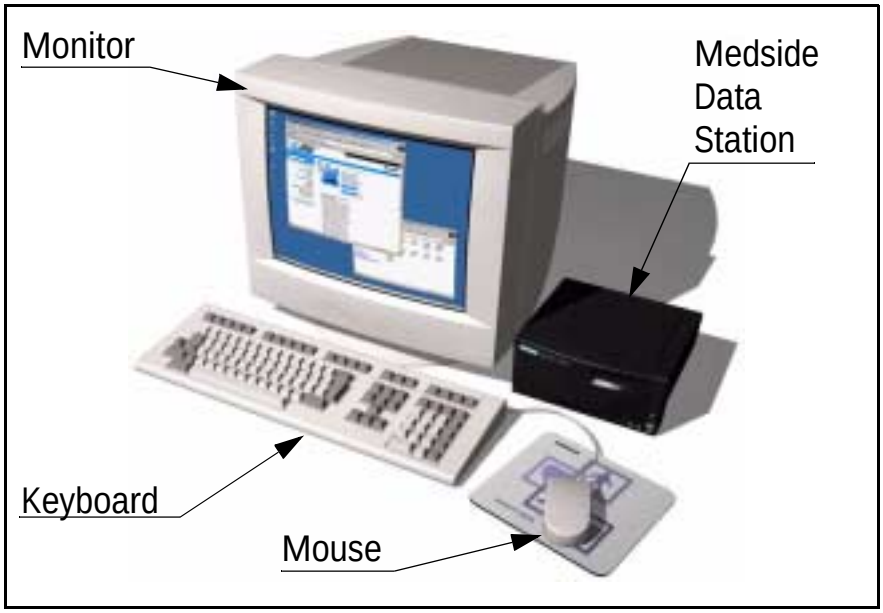

Figure 4-3 Medside Data Station (table top configuration)

1) Set MDS on flat clean surface, and within close proximity of monitor, keyboard, and mouse. See Figure 4-3.

2) Proceed to Section 5.

5 Monitor Installation

Do either a, b, or c as appropriate:

a If installing optional CRT to wall mount, go to Section 5.1.

b If installing optional Flat Screen to Medside Data Station, go to Section 5.2.

c If installing locally supplied monitor, go to Section 5.3.

5.1 CRT (Art. No. 57 35 894 E5310)

The same type of mounting bracket used to mount the Medside Data Station is used to mount the CRT monitor.

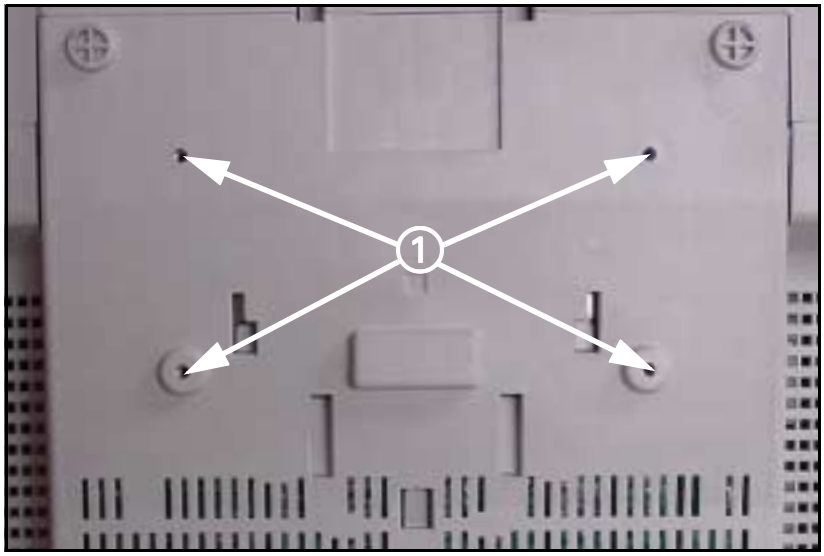

Figure 5-1 Monitor (bottom view)

1) Set Monitor upside down on clean surface.

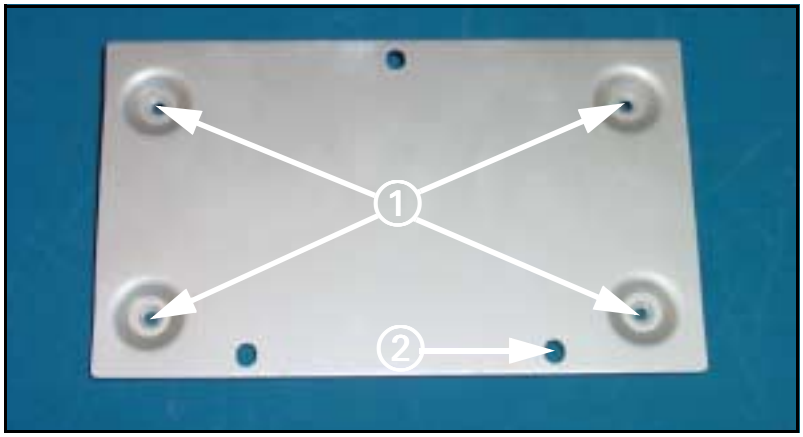

Figure 5-2 Mounting plate

2) Align clearance holes on mounting plate (① in Figure 5-2) to threaded holes on bottom of monitor (① in Figure 5-1), orientated so that raised area around holes on plate are against bottom of monitor.

   Note: This creates a gap so that the plate can easily slide into mounting bracket. Make sure the drill hole (② in Figure 5-2) is towards back of monitor. This hole is used for a locking pin from the mounting bracket.

3) Insert and tighten 4 Phillips-head screws (supplied).

4) Set monitor upright with mounting plate aligned to slots on left side of mounting bracket (see Figure 4-2 on page 8), and slide monitor into bracket so that hole on mounting plate aligns with locking pin.

5) Secure with locking pin. See step 3 in Section 4.1.

6) Proceed to Section 6.

5.2 Flat Screen Display (Art. No. 59 55 567 E531U)

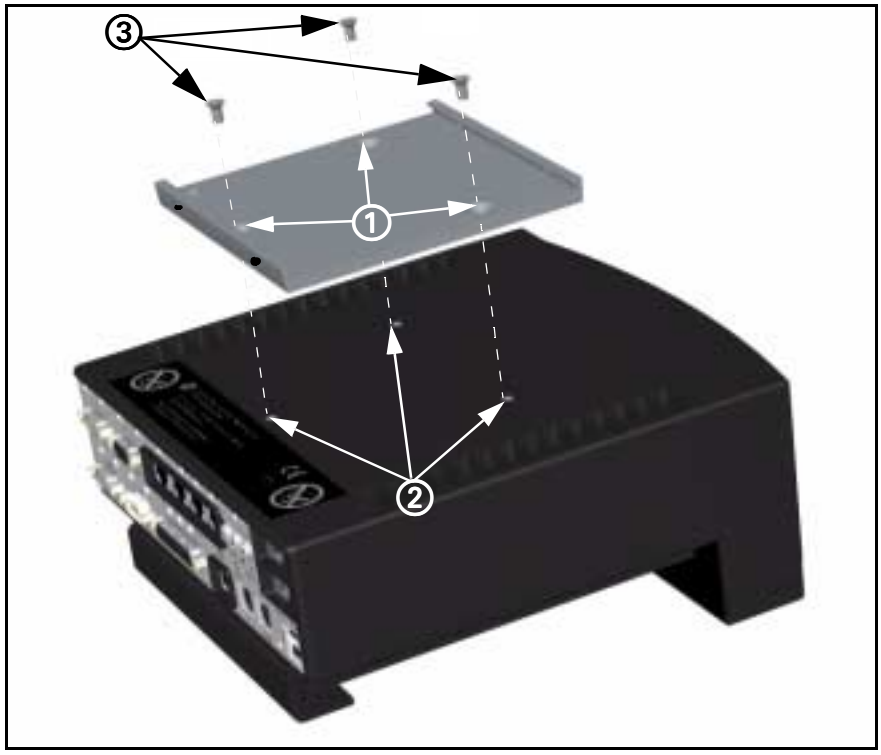

Figure 5-3 MDS with mounting bracket

1) Set MDS upright on flat surface.
2) Remove and discard three plastic plugs from mounting holes on top of MDS.
3) Align mounting bracket screw holes (① in Figure 5-3) to screw holes on top of MDS (② in Figure 5-3).

   Note: Mounting bracket and screws ship with flat screen display.
4) Insert and tighten 3 Phillips-head screws (supplied, ③ in Figure 5-3).

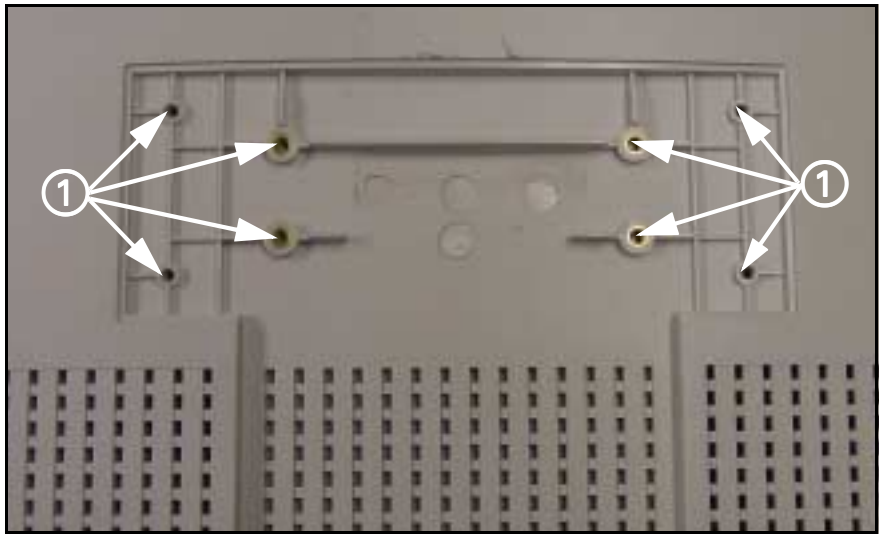

Figure 5-4 Flat Screen Display (rear view)

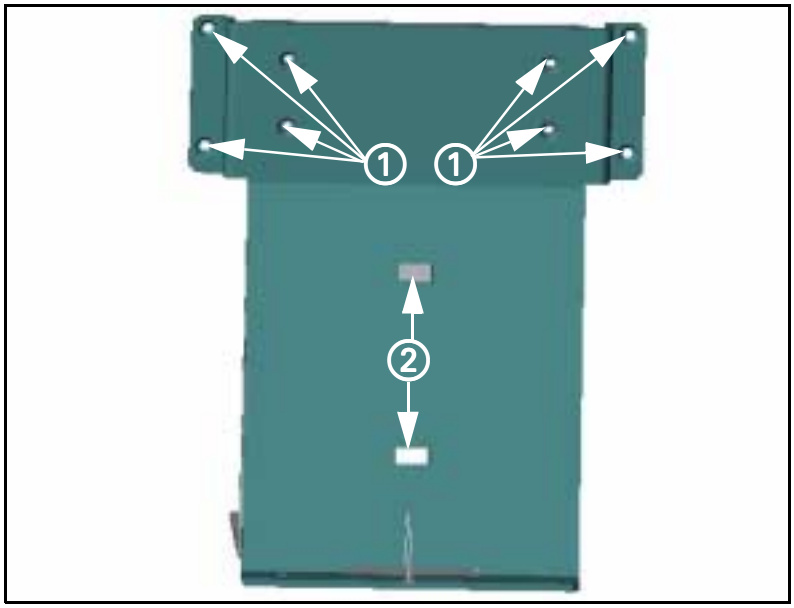

Figure 5-5 Flat Screen Support Mount

5) Place flat screen display face down on clean surface. See Figure 5-4 on page 10.

6) Align 8 support mount clearance holes (① in Figure 5-5) to threaded holes on back of flat screen display (① in Figure 5-4).

7) Insert and tighten 8 Phillips-head screws (supplied).

8) Insert 1 cable tie (supplied) through back of each slot (② in Figure 5-5) to enable power supply to be secured to support mount.

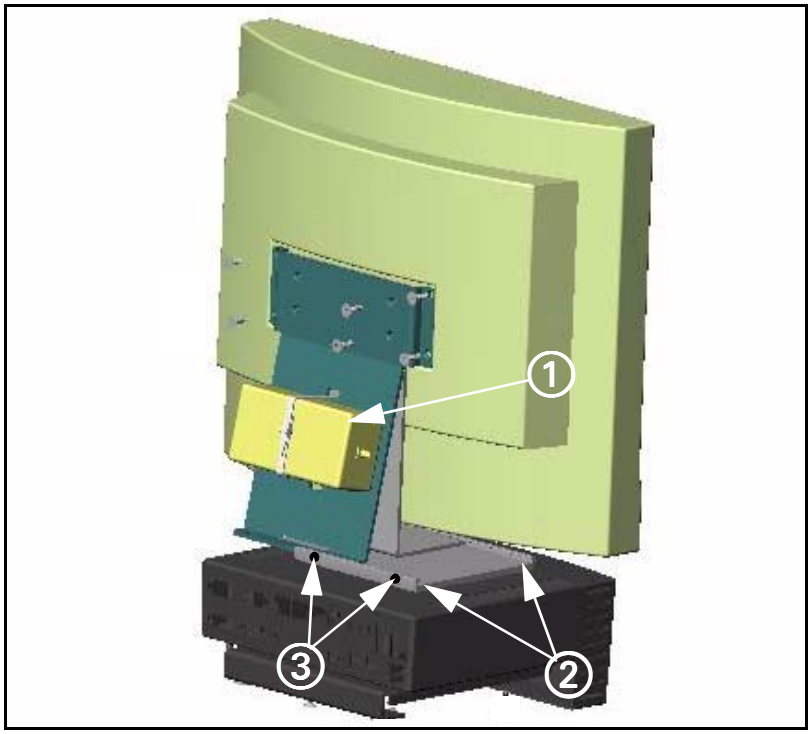

Figure 5-6 Flat Screen Display mounted to MDS

9) Set power supply (① in Figure 5-6) between both slots on support mount, and tighten cable tie to secure supply to mount.

10) Set flat screen display upright with bottom of support mount aligned to slots on mounting bracket (installed in step 2 and 3 above), and slide mount into bracket (② in Figure 5-6 on page 11), so that mount is positioned in center.

11) Insert and tighten 2 Phillips-head screws (supplied, ③ in Figure 5-6) on rear of mounting bracket to secure flat screen display in bracket.

12) Proceed to Section 6.

5.3 Locally Supplied Monitor

Refer to Installation instructions that were provided with monitor.

1) Set monitor on secure flat surface in close proximity to MDS.

2) Proceed to Section 6.

6 Keyboard, Mouse

Do either a or b as appropriate:

a If installing keyboard and mouse to wall mount, go to Section 6.1.

b If installing keyboard and mouse on table top, go to Section 6.2.

6.1 Wall Mount

1) Set keyboard on shelf (refer to illustration on front cover), and slide in side clamps to secure keyboard to shelf.

2) Set mouse on shelf (refer to illustration on front cover).

3) Proceed to Section 7.

6.2 Table Top

1) Set keyboard and mouse in close proximity to MDS. See Figure 4-3 on page 8.

2) Proceed to Section 7.

7 Connecting Devices

1) Insert and tighten 15 pin video cable from monitor into video out connector (② in Figure 7-1 on page 13) on rear of MDS.

2) Plug in Keyboard cable into keyboard connector (⑰ in Figure 7-1) on rear of MDS.

3) Plug in mouse cable into mouse connector (⑯ in Figure 7-1) on rear of MDS.

4) Plug power cord from monitor into hospital grade outlet. (If using flat screen monitor connect power cable from 12V DC power supply into back of monitor, and then plug in power cord from power adapter into hospital grade outlet).

5) Plug in power connector from MDS AC power adapter into Power In connector (⑦ in Figure 7-1) on back of Medside Data Station, and then plug in power cord from AC adapter into hospital grade outlet.

6) Proceed to Section 11, Functional Check - Power Circuits and Startup.

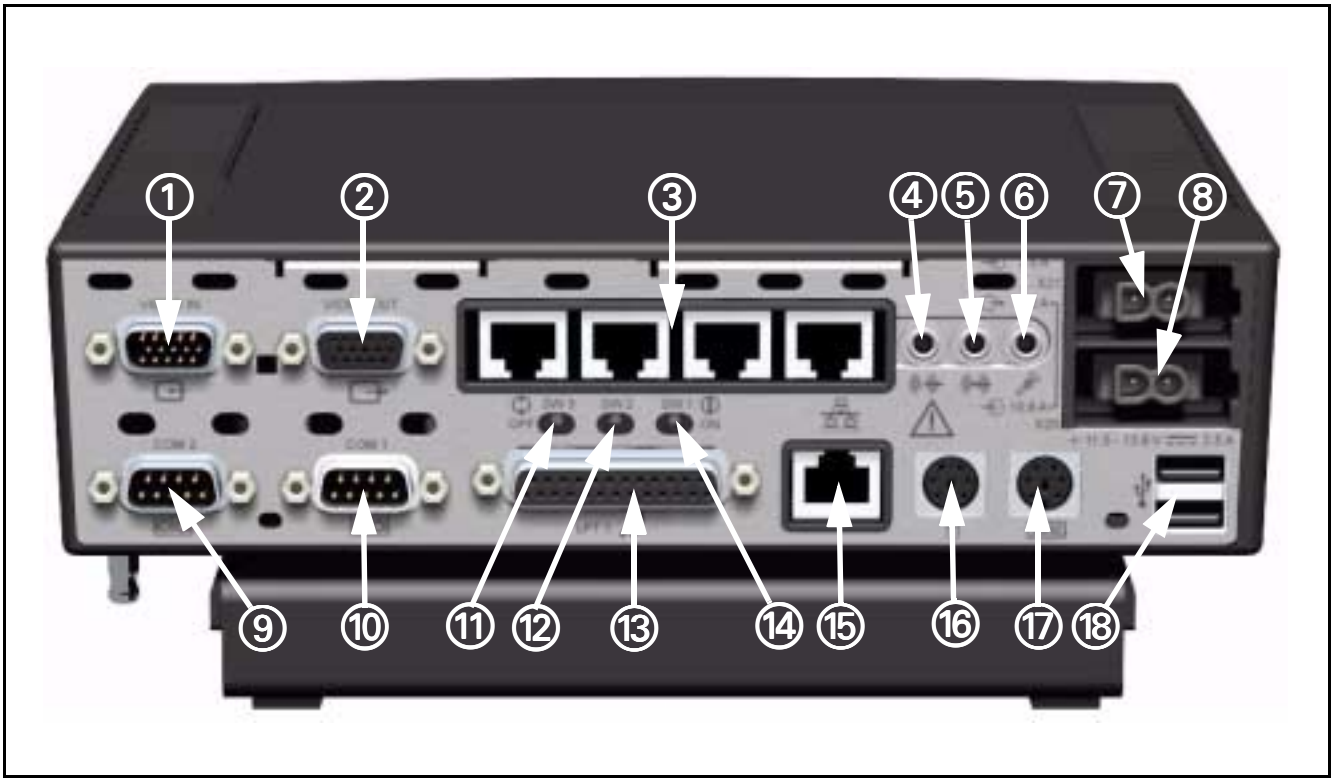

Figure 7-1 MDS (rear view)

Table 3: MDS Part Description

Item Number	Description	Item Number	Description
1	VIDEO IN / OPTIONAL COM 3/4	10	COM 1
2	VIDEO OUT	11	BOOT ROM SELECT (default, switch to right)
3	*ETHERNET HUB	12	VIDEO OVERRIDE (default, switch to right)
4	AUDIO OUT	13	PARALLEL PORT
5	AUDIO IN	14	PIEZO OVERRIDE (default, switch to right)
6	MICROPHONE	15	MAIN ETHERNET (auto-negotiating)
7	POWER IN	16	MOUSE
8	POWER (future use)	17	KEYBOARD
9	COM 2	18	USB
* Ethernet Hub will not auto-negotiate to a 10Mbs device. If a 10Mbs device is connected to the Ethernet Hub all devices must be manually set to 10Mbs operation. If **All** ports are occupied by 100Mbs devices, no manual settings are required. Consult your local IT department regarding manual settings of 10Mbs devices.			

8 Reinstallation of Windows 2000 Operating Systems and Installing Optional Drivers

This section explains how to reinstall Windows 2000 and also references how to install Optional Hardware Drivers onto a Medside Data Station hard drive.

Note: Windows 2000 reinstallation should not be required on a new MDS. The factory installs Windows 2000 on the MDS prior to shipment.

In addition to these instructions, the following Hardware and Software is required:

- Siemens Service Laptop meeting minimum Hardware requirements as specified by Med QM document ARTD-001.719.06.04.02 (V01) M4 or greater.
- RJ45 crossover cable.
- MDS Software Recovery CDROM (shipped with MDS).

Windows 2000 Reinstallation

Windows 2000 reinstallation requires making a network boot connection between an MDS RJ-45 network port, and a Windows 95/98 Laptop/PC RJ-45 network port, and then transferring the Windows 2000 image from the Laptop/PC CDROM drive to the MDS Hard Drive.

Optional Hardware

MDS Optional Hardware includes a Teac™ CDROM Drive, Backpack™ CDRW Drive, and Microsoft™ Optical Mouse. Refer to "Loading Software" section in INFINITY™ Medside Data Station Reference Manual for Teac CDROM drive and Backpack CDRW drive operation.

An Optical Mouse driver CDROM is shipped with each Optical Mouse. This driver must be loaded through a network connection to the MDS. Contact local IT department for network connection configuration.

8.1 Laptop Configuration

Setup the Service laptop as follows to allow network connectivity between a Laptop CDROM drive and an MDS Hard drive.

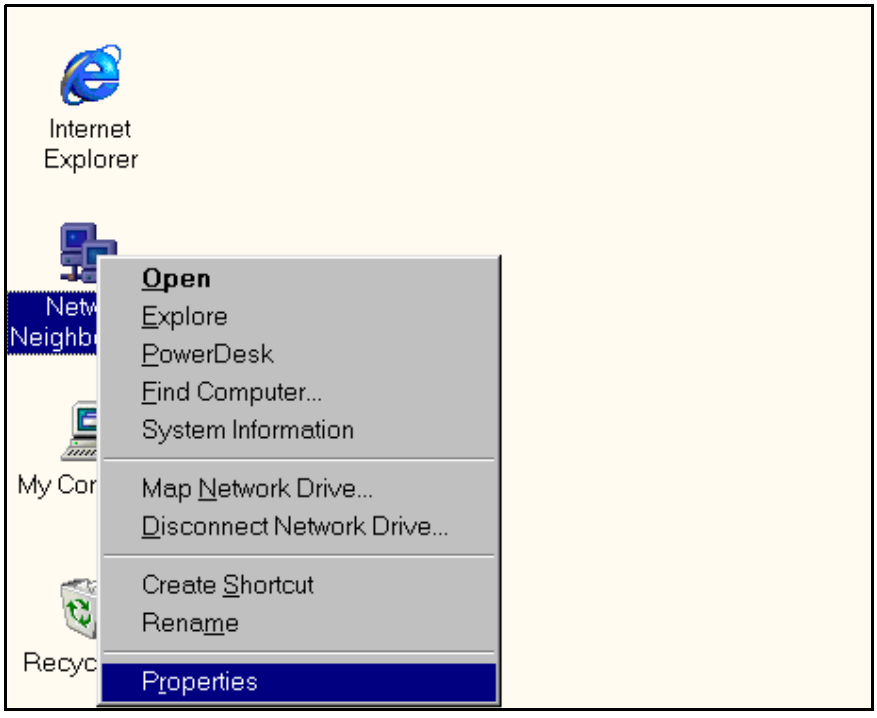

Figure 8-1 Windows Main Menu

8.1.1 TCP/IP Setup

1) Boot Service Laptop to Windows™ 95/98 screen.
2) Right-click on *Network Neighborhood* icon (see Figure 4-1 on page 7) and click on *Properties*.

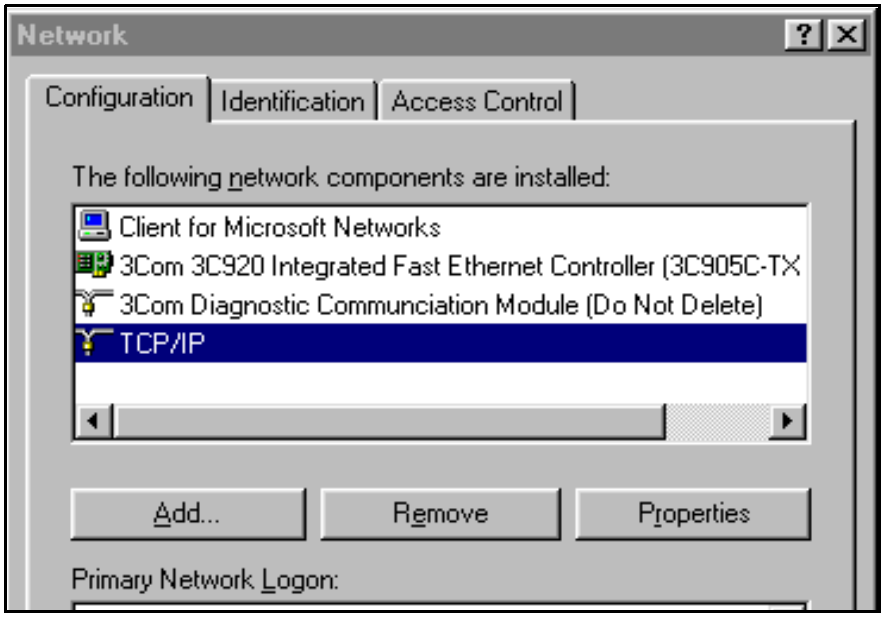

Figure 8-2 Network Window

3) At "Network" window (see Figure 8-2) click on *Configuration* Tab, scroll down to Laptop TCP/IP Ethernet Adapter, and select *Properties*.

   Note: TCP/IP Ethernet Adapter name is unique according to specific adapter used on laptop. Refer to Service Laptop Ethernet Adapter vendor document for specific name.

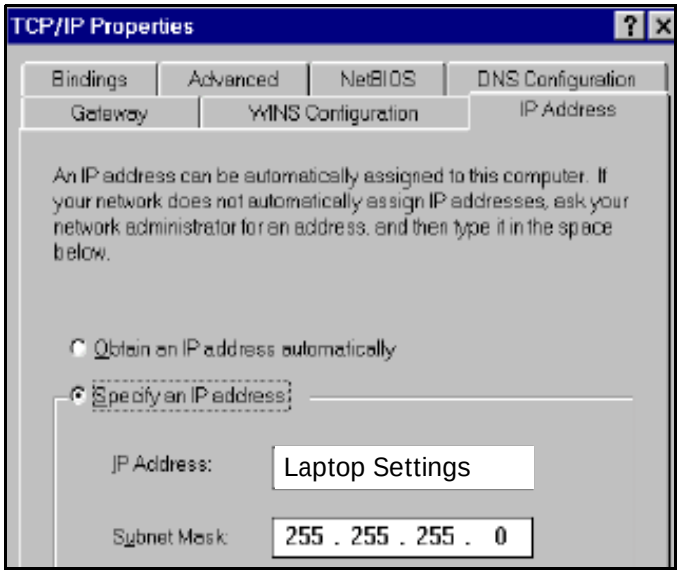
TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Specify an IP address:
IP Address:
Laptop Settings
Subnet Mask:
255 . 255 . 255 . 0

Figure 8-3 TCP/IP Window

4) Copy "IP Address" to the following line:_____

Note: IP Address is needed to reconfigure the service laptop back to its original configuration, after completing Windows 2000 reinstallation.

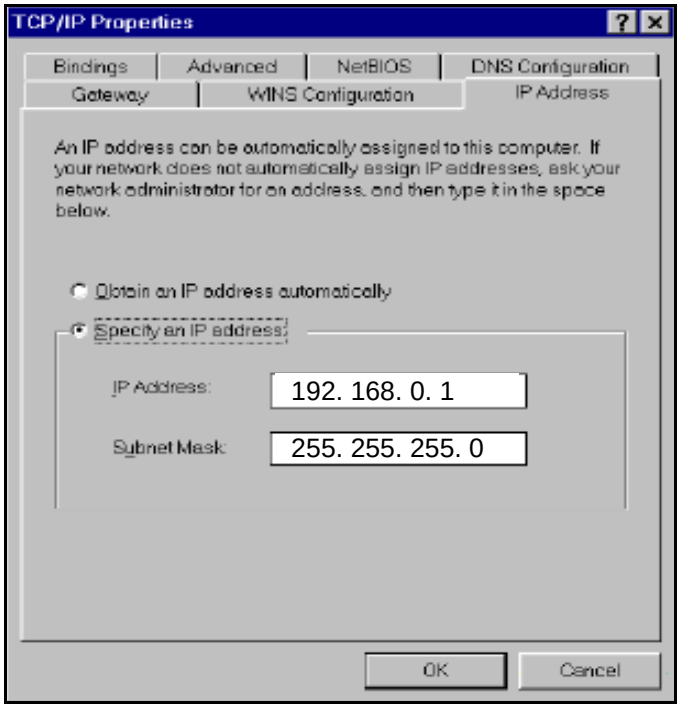
TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Specify an IP address:
IP Address:
192. 168. 0. 1
Subnet Mask:
255. 255. 255. 0
OK
Cancel

Figure 8-4 TCP/IP Window

5) Type new IP address 192.168.0.1 as shown in Figure 8-4, then click on *OK* button.

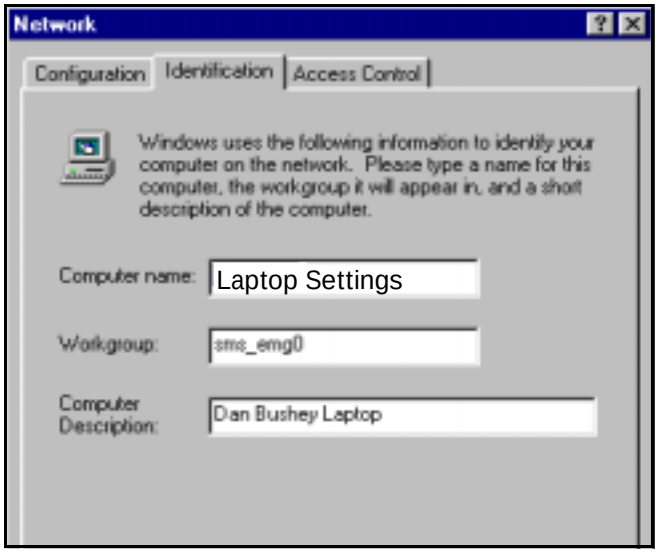
Network
Configuration
Identification
Access Control
Windows uses the following information to identify your computer on the network. Please type a name for this computer, the workgroup it will appear in, and a short description of the computer.
Computer name:
Laptop Settings
Workgroup:
sms_emg0
Computer Description:
Dan Bushey Laptop

Figure 8-5 Network window

6) At "Network" window (see Figure 8-5) click on *Identification* Tab.

7) Copy Computer Name to the following line:_____

8.1.2 CDROM Share Configuration

The service laptop CDROM must be set up for file sharing. Complete the following section to configure service laptop CDROM for file sharing.

1) Select *Start* and scroll to *Programs*, and then *Windows Explorer*.

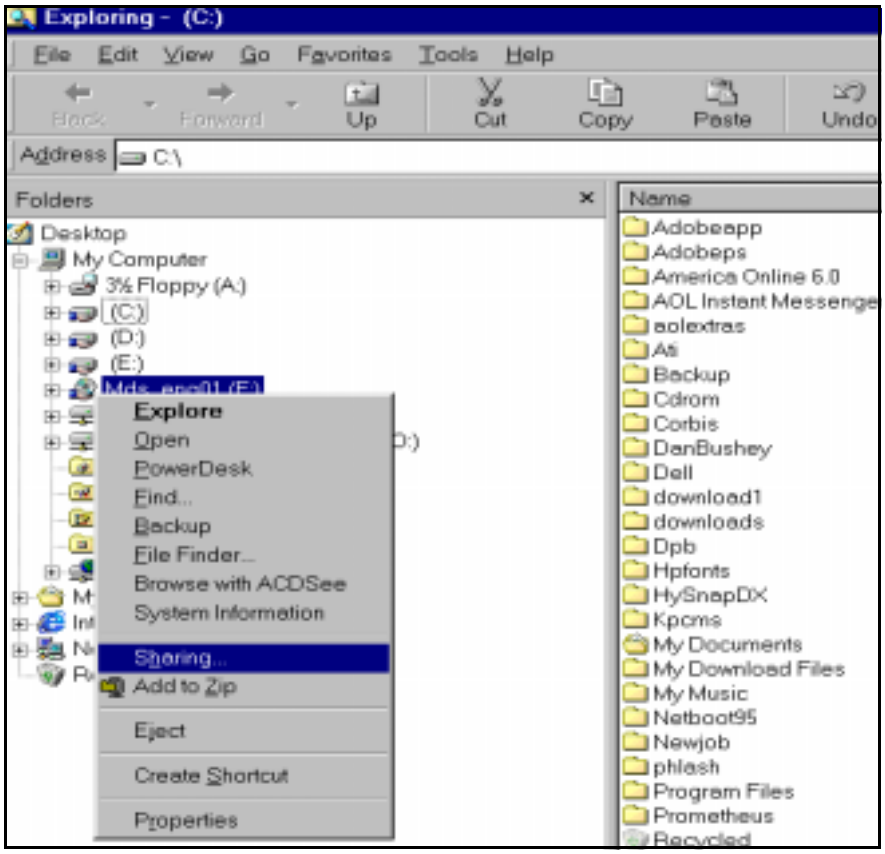

Figure 8-6 Windows Explorer

2) At "Exploring" window, right-click on *CDROM* icon and select *Sharing* from drop down menu (see Figure 8-6).

   Note: Steps 2-4 can also be used to set up file sharing of laptop hard drive (eg."C"drive, "D" drive) and laptop floppy drive ("A" drive) by selecting that drive in step 2 and providing a unique user-provided share name in step 3.

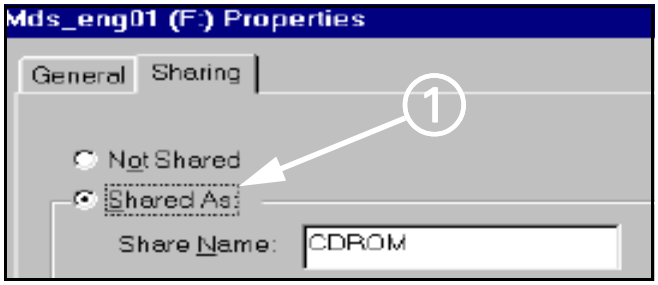

Figure 8-7 Properties Window

3) At "Properties" window, click on *Shared As* button (① in Figure 8-7), type **CDROM** in "Share Name:" box, click on *Apply*, then click *OK*.

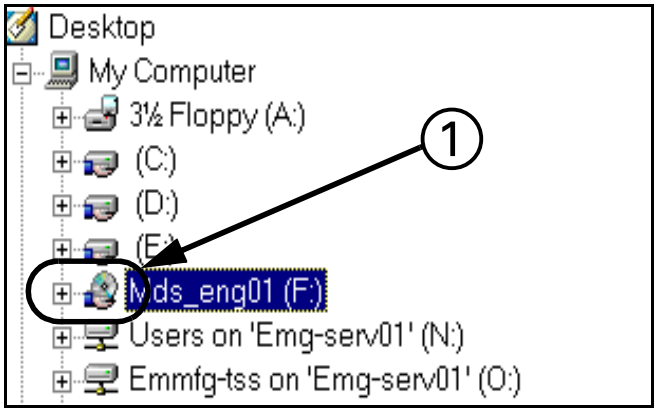

Figure 8-8 Windows Explorer

4) Verify that there is a hand shown below the CDROM icon (see ① in Figure 8-8).

8.1.3 Install MDS Utility

The MDS requires the use of a software utility to make a low level connection between a MDS and a Service Laptop. This utility is also used to transfer data between the two devices. Install the MDS software Utility as follows:

1) Insert MDS Recovery CDROM (shipped with MDS) into Service laptop CDROM Drive.

2) At Service laptop Windows screen, select *Start* and scroll to *Programs*, then *Windows Explorer.*

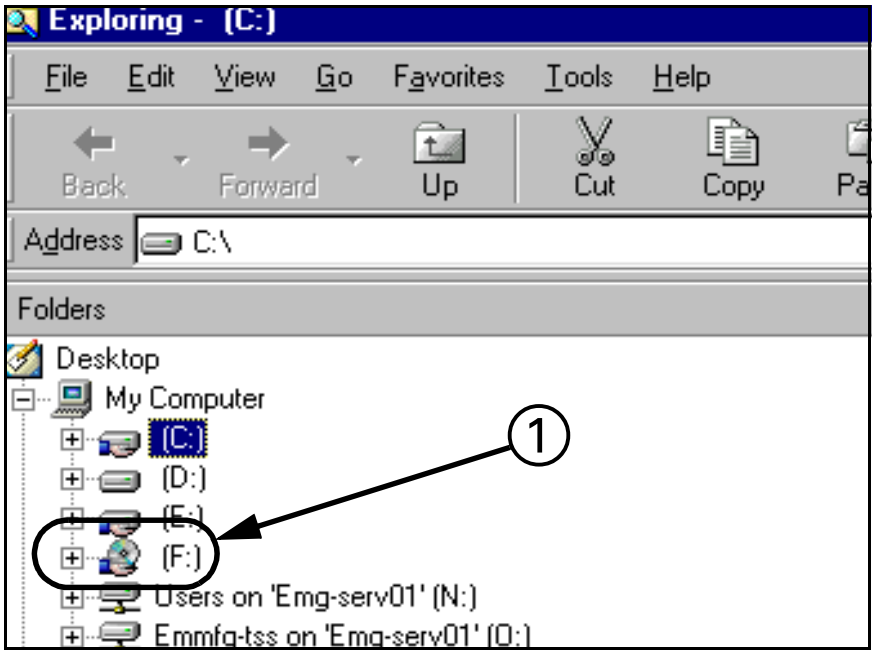

Figure 8-9 Explorer Window

3) Click on *CDROM* icon (① in Figure 8-9) in left pane of "Explorer" window.

4) Double click on *Tftpboot* directory in right pane of Explorer window.

5) Double-click on *Remoteboot.exe* file in right pane of Explorer window.

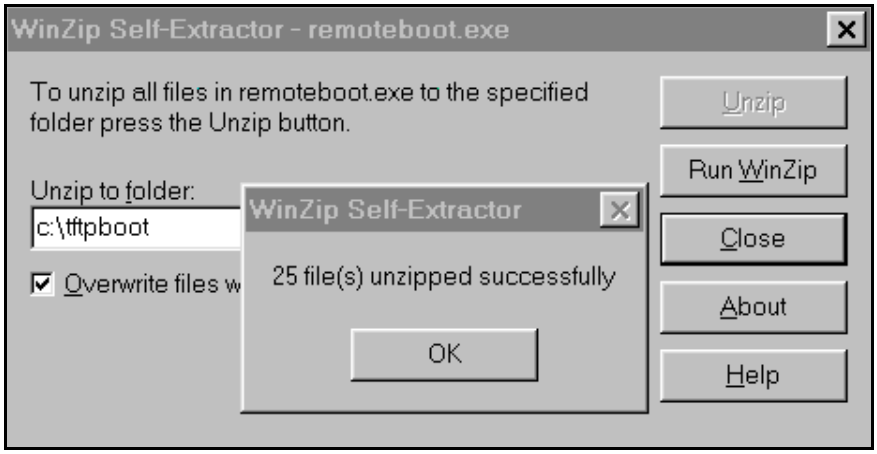

Figure 8-10 Win Zip Extractor Window

6) Click on *Unzip* button.

   Note: Files are extracted to tftpboot folder on the laptop "C" drive. Once files have been extracted, the Win Zip Self-Extractor windows appear, indicating 25 file(s) unzipped successfully (see Figure 8-10).

7) Click on *OK*, then Close in "Win Zip Self-Extractor" windows.

8) Close "Windows Explorer" window.

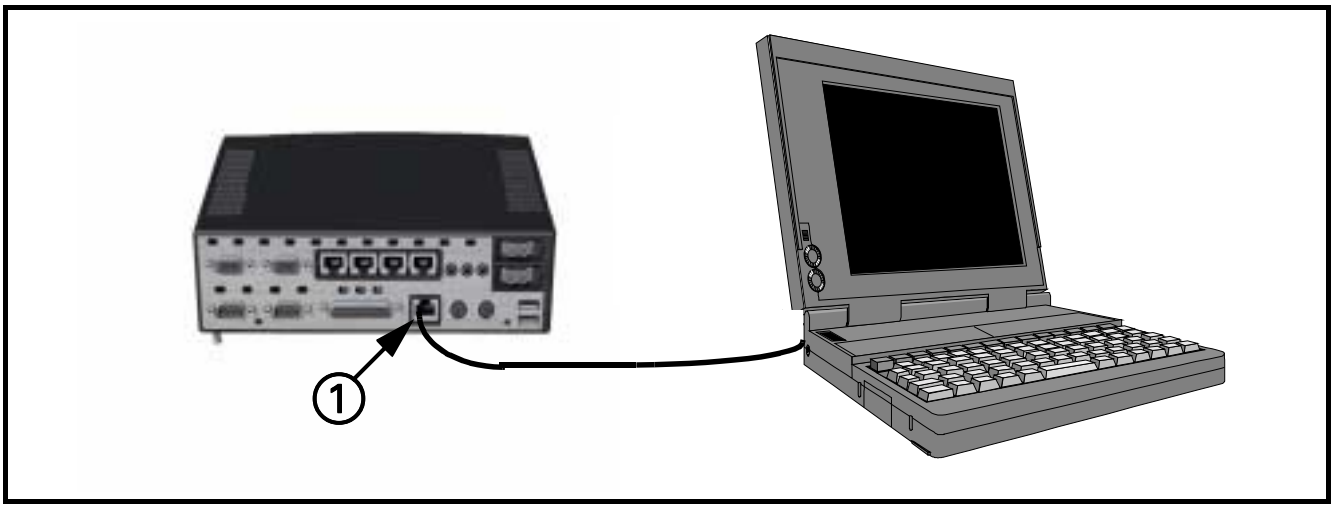

Figure 8-11 MDS, Laptop Hardware Connection

8.2 MDS to Service Laptop Interface

1) Connect Crossover Cable from Laptop Network Interface Card Ethernet Port to MDS Main Ethernet Port (① in Figure 8-11).

   Note: Ensure MDS is not connected to Hospital Network.

2) Connect MDS Power Adapter, Keyboard, Mouse, and Monitor according to MDS Hardware Installation Instructions. Refer to Doc. No. T951-XX-7600 (shipped with MDS).

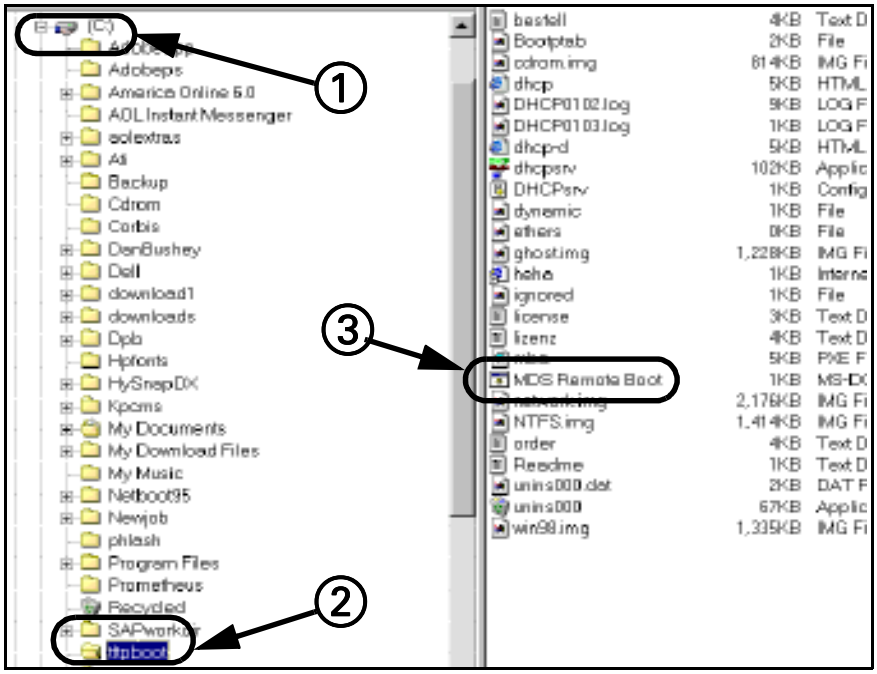

Figure 8-12 Windows Explorer

8.3 Launch MDS Utility

1) At Laptop Windows screen, select *Start* and scroll to *Programs*, and then to *Windows Explorer.*
2) Double-click on *C* drive icon (① in Figure 8-12) in left pane of window.
3) Click on *tftpboot* folder (② in Figure 8-12) in left pane.

   Note: Verify power On/Off switch on MDS is Off.
4) Double-click on *MDS Remote Boot* icon (③ in Figure 8-12) in right pane.

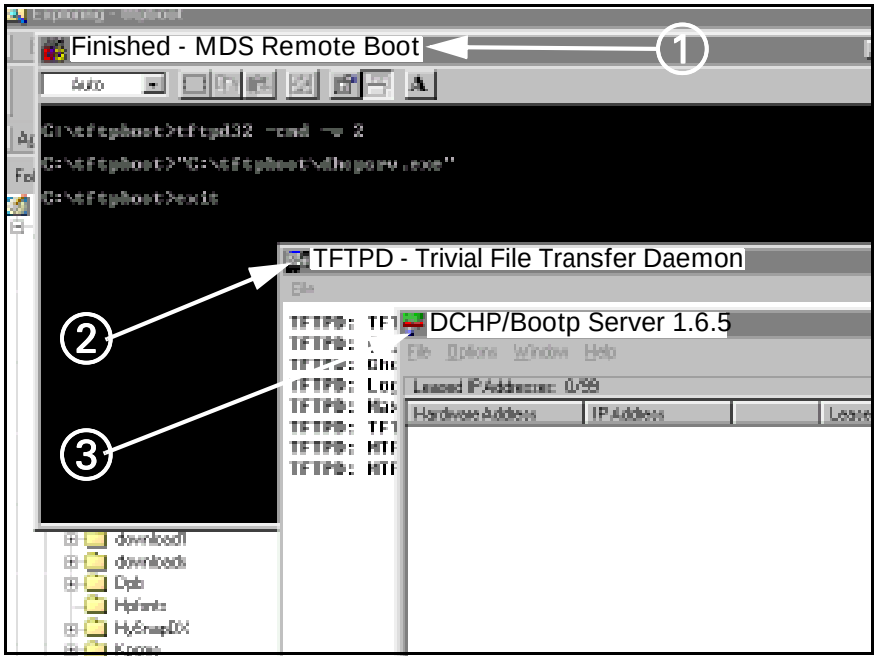

Figure 8-13 Window TFTPD

5) Verify "Finished - MDS Remote Boot" window (① in Figure 8-13) opens, then "TFTPD - Trivial File Transfer Daemon" window (② in Figure 8-13) opens, then DHCP/Bootp Server 1.6.5 window (③ in Figure 8-13) opens. If these windows are not displayed repeat steps 2-4 above.

   Note: DHCP/Boottp Server 1.6.5 window may open minimized. If window is not displayed on Main screen,(③ in Figure 8-13) check to see if program is in Windows Task bar at bottom of screen.

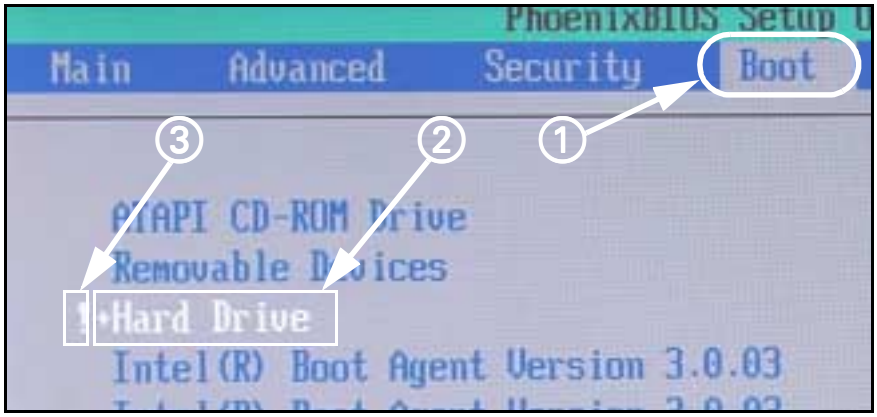

Figure 8-14 Setup Utility Window

8.4 MDS Network Boot

1) Switch Power On/Off switch on MDS to On.
2) Press and hold *F2* key to enter BIOS setup.
3) At PhoenixBIOS Setup Utility window, use MDS keyboard left/right arrow keys to Select *Boot* Tab (① in Figure 8-14).
4) Use MDS keyboard Up/Down arrows to Select *+Hard Drive* (② in Figure 8-14).
5) Hold down on *Shift* key, and momentarily press **!** key.
6) Verify that an exclamation point **!** appears to the left of *+Hard Drive* (③ in Figure 8-14).
7) Press MDS keyboard *F10* key.
8) Press <*Enter*> to save and exit.

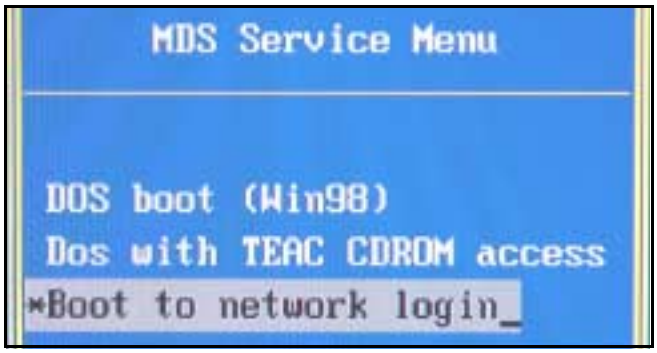

Figure 8-15 MDS Service Menu

9) Verify MDS reboots to "MDS Service Menu" (see Figure 8-15).
10) Use MDS keyboard Up/Down arrows, if necessary, to Select *Boot to network login*, and then press <*Enter*>.

8.5 Mapping MDS

After pressing <*Enter*>, the MDS Utility establishes a network link between the Service Laptop and the MDS. Once this link has been established, the A:\> prompt appears at bottom of screen.

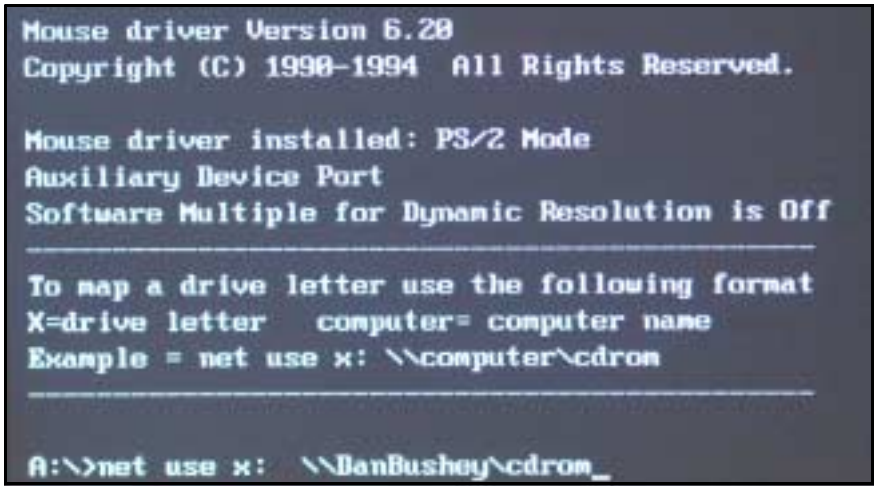
Mouse driver Version 6.20
Copyright (C) 1990-1994 All Rights Reserved.
Mouse driver installed: PS/2 Mode
Auxiliary Device Port
Software Multiple for Dynamic Resolution is Off
To map a drive letter use the following format
X=drive letter computer= computer name
Example = net use x: \\computer\cdrom
A:\>net use x: \\DanBushey\cdrom_

Figure 8-16 Map M.D.S. to CD ROM drive

The text after the A:\ prompt displays an example of how to map the MDS to a Service Laptop CDROM Drive (see Figure 8-16).

11) After the A:\> prompt, type **net**^**use**^**x:**^^**\\computername\shared drivename**, and then press <*Enter*>.

    Note: **Computer name** = name noted in step 7 of Section 8.1.1, and **shared drive** = name of drive typed in step 3 of Section 8.1.2.

12) At message "Type your user name, or press ENTER if it is ADMINISTRATOR:", press <*Enter*>.

13) At message "Type your password:", press <*Enter*>.

14) At message "Please confirm your password, so that a password list may be created:", press <*Enter*>.

15) At A:\> prompt, type **x:** and then press <*Enter*>.

8.6 Install Windows 2000 Image

Caution:

Windows™ 2000 reinstallation must be performed only in cases where the MDS hard drive has been replaced with a new blank hard drive, or if Windows 2000 is corrupted and reinstallation is a final troubleshooting procedure. All data (non-Windows 2000) files must be backed up before proceeding with reinstallation, as the MDS hard drive is erased (formatted) during the reinstallation process.

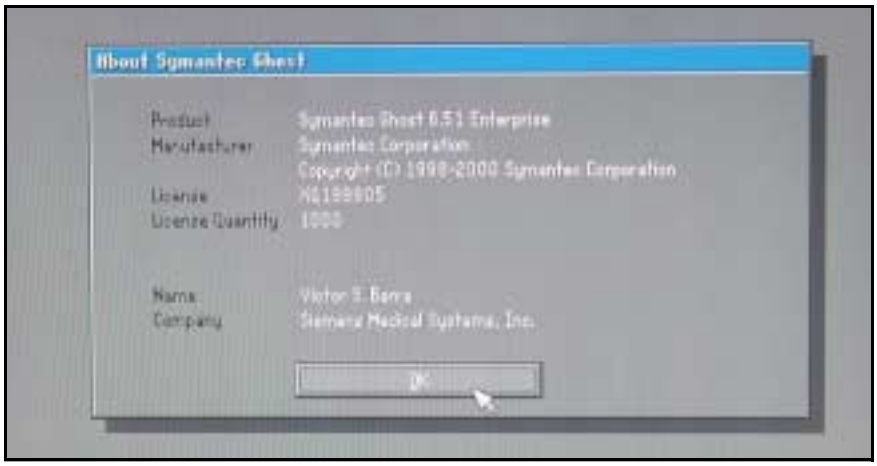

Figure 8-17 Norton Ghost menu

1) At X:\> prompt type **ghost,** and then press <*Enter*>.

2) After Norton™ Ghost screen appears, click on *OK* to begin using Norton Ghost Utility.

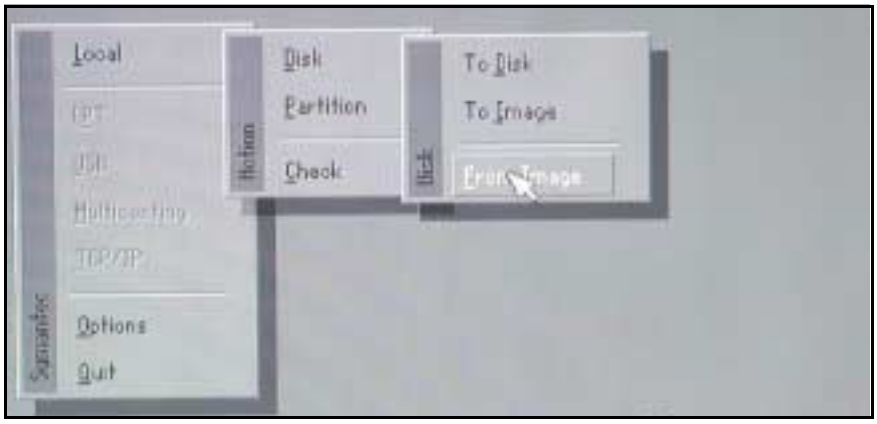

Figure 8-18 Utility Window

3) At Norton Ghost Utility window, select *Local → Disk → From Image.*

4) Click on *From Image*, and then press <*Enter*>.

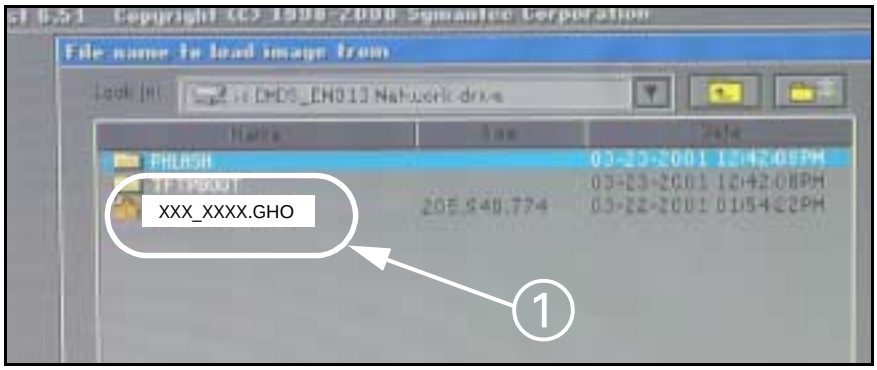

Figure 8-19 Image Folder (Image file)

5) At "File name to load image from" window, click on xxx*_xxxx.GHO* (see ① in Figure 8-19).

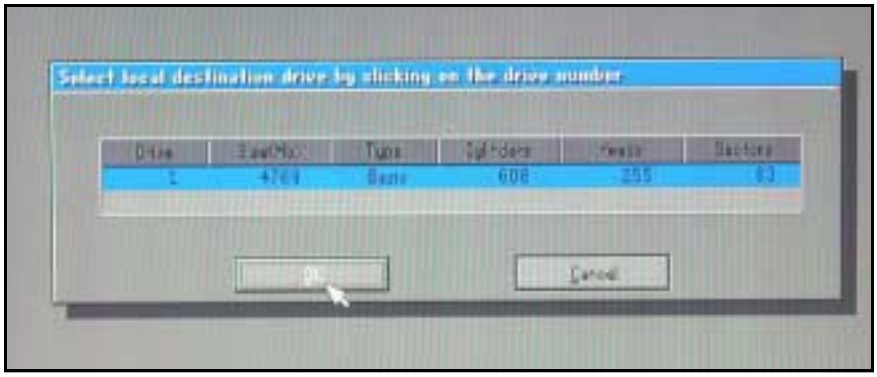

Figure 8-20 Drive Number Window

6) At “Select local destination drive by clicking on the drive number” window, click on *OK* button.

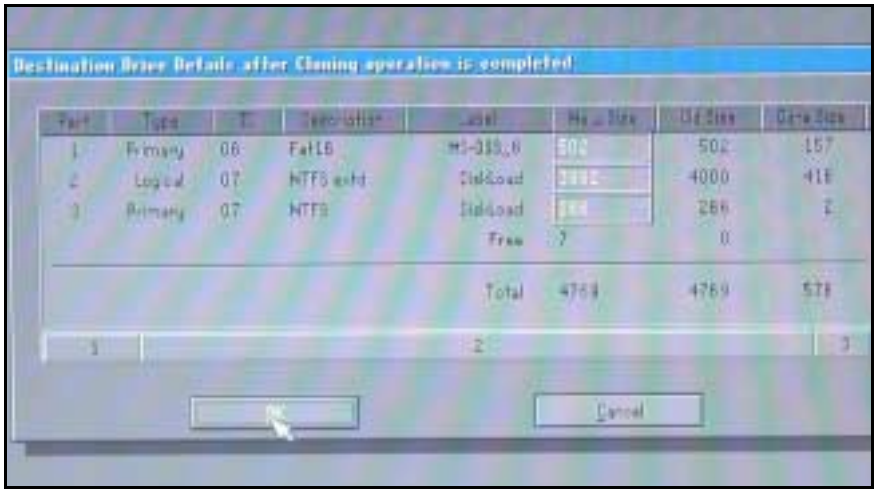

Figure 8-21 Destination Drive Window

7) At “Destination Drive Details” window, click on *OK* button.

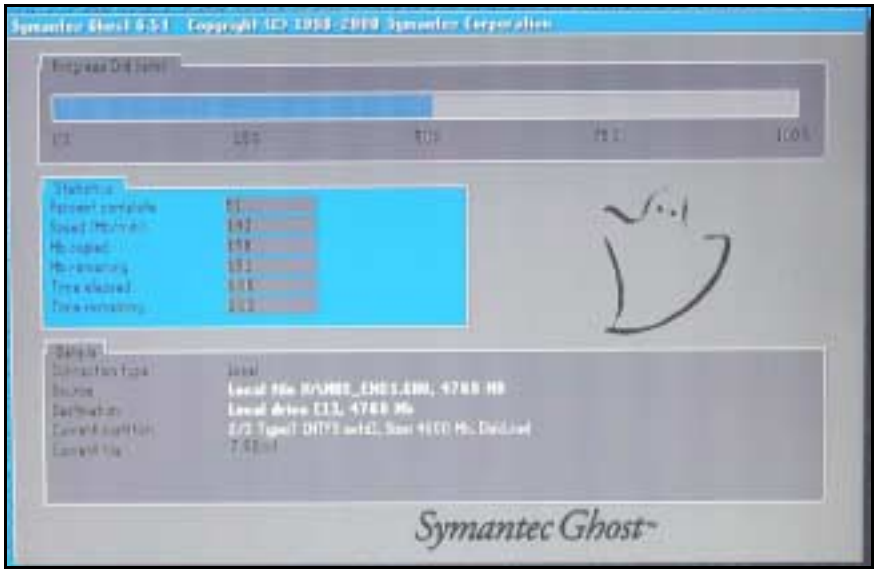

Figure 8-22 Image Transfer Window

8) At "Question" window, click on *Yes* to proceed with disk load.

Note: Ghost image is transferred from the Service Laptop CDROM drive to the MDS hard drive. Once Ghost image has been transferred "Clone Complete" window appears. See Figure 8-23 on page 25.

Figure 8-23 Clone Window

9) At "Clone Complete" window, click on *Continue* to return to Ghost Main Utility page.

Figure 8-24 Main Window

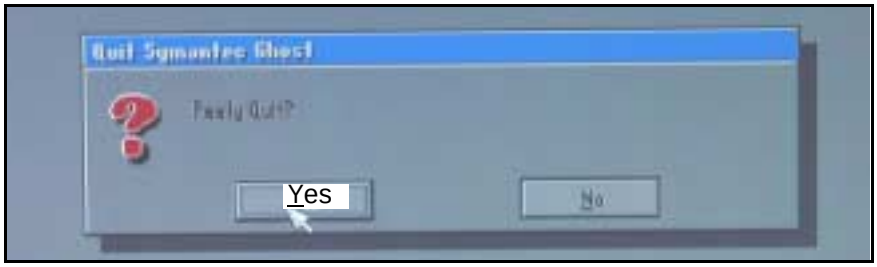

Figure 8-25 Quit Symantec Ghost Window

10) At "Quit Symantec Ghost" window, click on *Yes* to return to X:\> prompt.

11) At MDS keyboard, press and hold *Ctrl +Alt +Delete* keys to reboot MDS.

12) Press and hold MDS *F2* key to enter PhoenixBIOS Setup Utility.

13) Complete steps 2 and 3 in Section 8.4 (removing exclamation point from left side of "+Hard Drive") to enable MDS hard drive boot.

Press MDS keyboard *F10* key, and then press <*Enter*> to save and exit.

Windows 2000 Professional Setup
Welcome to the Windows 2000 Setup Wizard
Click Next to continue with Setup.
Windows 2000
Next>

Figure 8-26 Windows 2000 Setup Screen

14) Verify MDS bots to Windows 2000 Setup Wizard.

15) Click on *Next*.

16) At Operating System License Agreement screen, click on button beside "I accept this agrement", then click on Next.

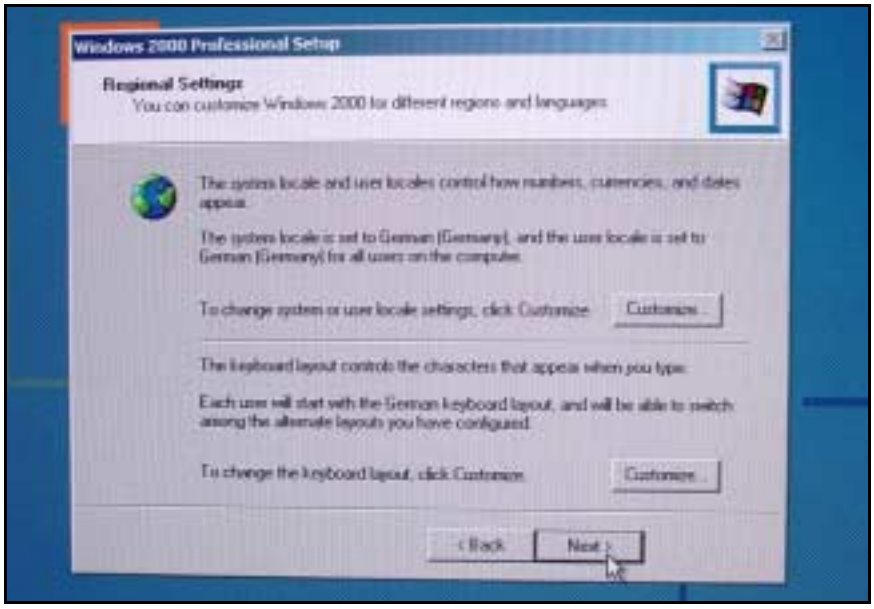
Windows 2000 Professional Setup
Regional Settings
You can customize Windows 2000 for different regions and languages
The system locale and user locales control how numbers, currencies, and dates appear.
The system locale is set to German (Germany), and the user locale is set to German (Germany) for all users on the computer.
To change system or user locale settings, click Customize.
Customize...
The keyboard layout controls the characters that appear when you type.
Each user will start with the German keyboard layout, and will be able to switch among the alternate layouts you have configured.
To change the keyboard layout, click Customize.
Customize...
< Back
Next >

Figure 8-27 Windows 2000 Setup screen

17) At “Regional Settings Window” screen (see Figure 8-27) click on *Customize* and set System and Keyboard settings for local regional parameters, then click *Next*.

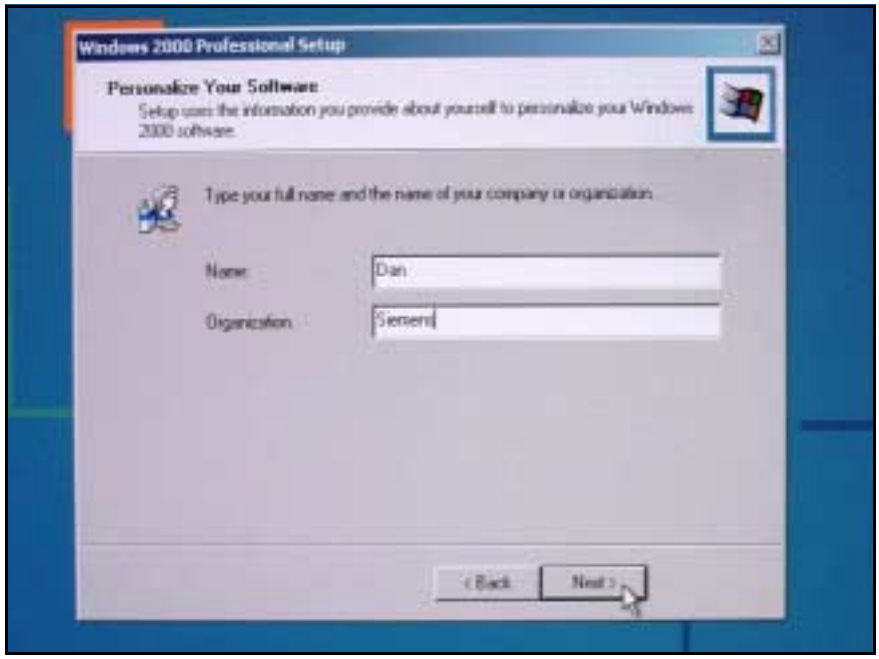
Windows 2000 Professional Setup
Personalize Your Software
Setup uses the information you provide about yourself to personalize your Windows 2000 software.
Type your full name and the name of your company or organization.
Name:
Dan
Organization:
Siemens
< Back
Next >

Figure 8-28 Personalize screen

18) At “Personalize Your Software” screen (see Figure 8-28), type in your name and Organization and click on *Next.*

Windows 2000 Professional Setup
Computer Name and Administrator Password
You must provide a name and an Administrator password for your computer.
Setup has suggested a name for your computer. If your computer is on a network, your network administrator can tell you what name to use.
Computer name:
MDS
Setup creates a user account called Administrator. You use this account when you need full access to your computer.
Type an Administrator password.
Administrator password:
Confirm password:
< Back
Next >

Figure 8-29 Computer Name and Administrator Password screen

19) At “Computer Name and Administrator” screen (see Figure 8-29), type in Computer name in “Computer name” box.

20) Type Administrator password in “Administrator password” box. Then re-type Administrator password in “Confirm password” box and click on *Next*.

Windows 2000 Professional Setup
Date and Time Settings
Set the correct date and time for your Windows computer.
Date & Time
Donnerstag, 6. Dezember 2001
13:36:01
Time Zone
(GMT-05:00) Eastern Time (US & Canada)
Automatically adjust clock for daylight saving changes
< Back
Next >

Figure 8-30 Local Date and Time screen

21) At “Date and Time Settings” screen (see Figure 8-30), set Local Date, Time and Time Zone for local region parameters. If appropriate for this region, check box next to “Automatically adjust for daylight savings time”.

22) Click on *Next*.

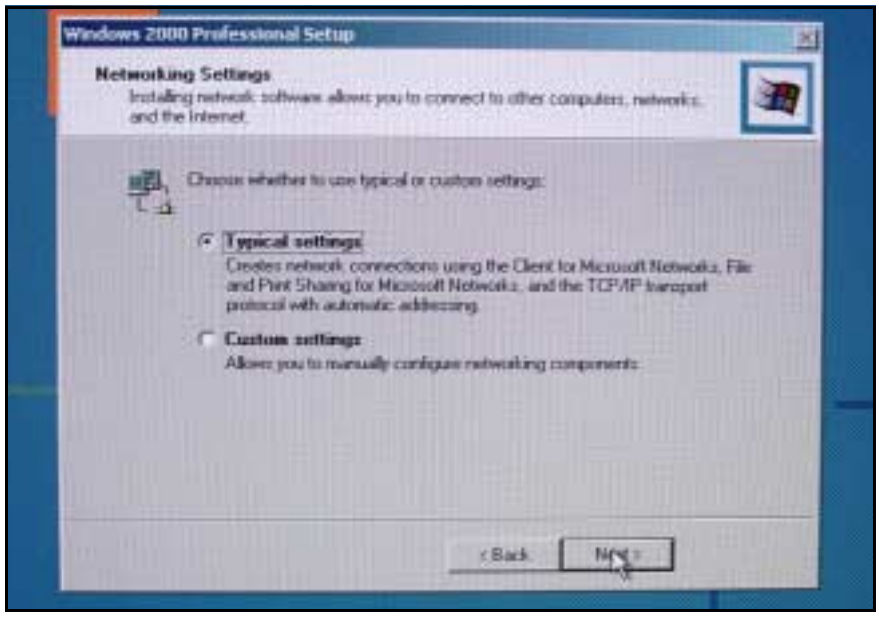

Figure 8-31 Network Settings screen

23) If configuring MDS for a network, select *Custom Settings*, then click on *Next* and follow instructions to set up MDS for this network as specified by the Hospital IT Administrator. Otherwise, select *Typical Settings* and click on *Next*.

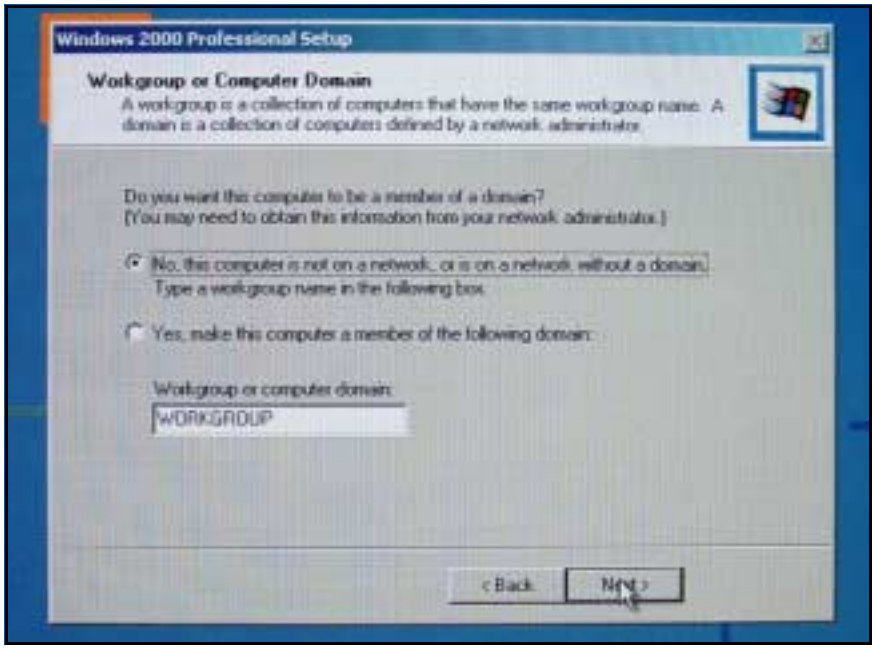
Windows 2000 Professional Setup
Workgroup or Computer Domain
Do you want this computer to be a member of a domain?
No, this computer is not on a network, or is on a network without a domain.
Type a workgroup name in the following box.
Yes, make this computer a member of the following domain:
Workgroup or computer domain:
WORKGROUP
< Back
Next >

Figure 8-32 Workgroup/Domain screen

24) At "Workgroup or Domain" screen, (see Figure 8-32) set up this computer as specified by Hospital IT Administrator, then click *Next*.

Windows 2000 Professional Setup
Completing the Windows 2000 Setup Wizard
You have successfully completed Windows 2000 Setup.
If there is a CD in your drive, remove it. Then, to restart your computer, click Finish.
Windows 2000
< Back
Finish

Figure 8-33 Completing Setup screen

25) At “Completing the Windows Setup Wizard” screen, (see Figure 8-33) click on *Finish*.

Network Identification Wizard
Welcome to the Network Identification Wizard
This wizard helps you connect your computer to a network.
To continue, click Next.
< Back
Next >
Cancel

Figure 8-34 Network Identification screen

26) Verify MDS reboots to “Network Identification Wizard” window (see Figure 8-34) .

27) Click on *Next*.

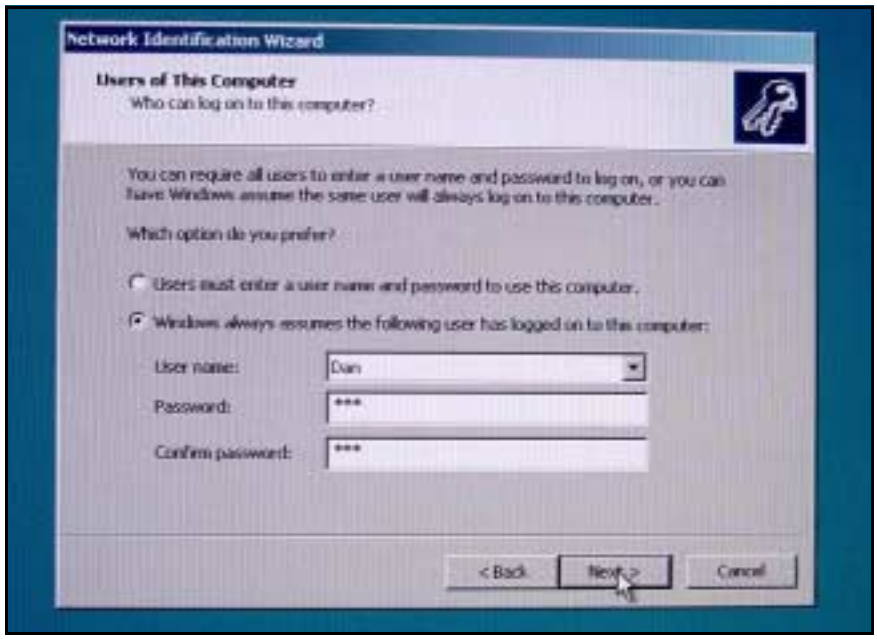
Network Identification Wizard
Users of This Computer
Who can log on to this computer?
You can require all users to enter a user name and password to log on, or you can have Windows assume the same user will always log on to this computer.
Which option do you prefer?
Users must enter a user name and password to use this computer.
Windows always assumes the following user has logged on to this computer:
User name:
Dan
Password:
***
Confirm password:
***
< Back
Next >
Cancel

Figure 8-35 Network User screen

28) Type in this computers User Name and Password information (see Figure 8-35) and click on *Next*.

Figure 8-36 Complete Network Identification screen

29) At "Completing the Network Identification Wizard" window, (see Figure 8-36) click on *Finish*.

30) Verify that correct language appears on Windows 2000 Workstation main screen.

9 Phoenix BIOS Phlash

Each MDS is shipped with a default BIOS (installed at the factory). Phlashing BIOS is necessary only if current MDS BIOS is not operating correctly or if an updated version is needed to correct MDS system failures. If original BIOS is not operating correctly, complete Section 2.2 before Phlashing BIOS. If Section 2.2 fails to correct problem, Phlash BIOS as described below.

BIOS Phlash files are distributed in 4 formats:

- Existing Phlash files on MDS hard drive.
- Phlash files on MDS Software CDROM (shipped with each MDS).
- Upgrade Phlash files ordered from factory.
- Upgrade Phlash files downloaded from EM location on MED-TD site (www-td.med.siemens.de).

Setup MDS to phlash the MDS BIOS as described in Section 9.1 and Section 9.2 below.

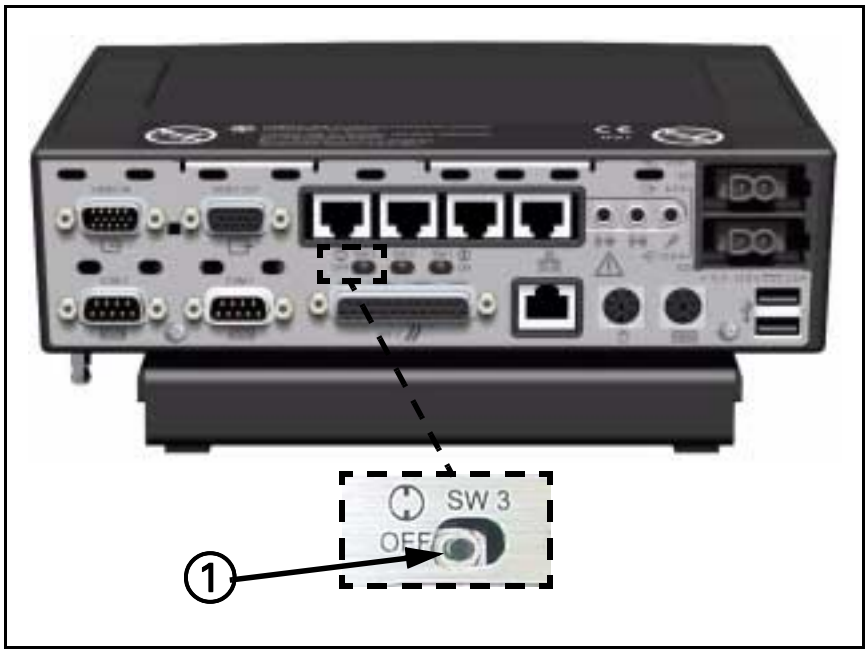

Figure 9-1 MDS (rear view)

9.1 Hardware Setup

Verify that BIOS switch (see ① in insert in Figure 9-1) on rear of MDS is set to right.

9.2 Software Setup

Copy Phlash software to MDS hard drive according to Section 9.2.1 for CDROM or Section 9.2.2 below, if downloading from laptop.

9.2.1 CDROM Setup Procedure

Use this procedure to load Phlash software from MDS CDROM (shipped with MDS), or Phlash Upgrades distributed on CDROM (ordered from Factory).

1) Insert MDS CDROM into Service Laptop.
2) Configure service laptop for network boot according to Section 8.1 through Section 8.4.

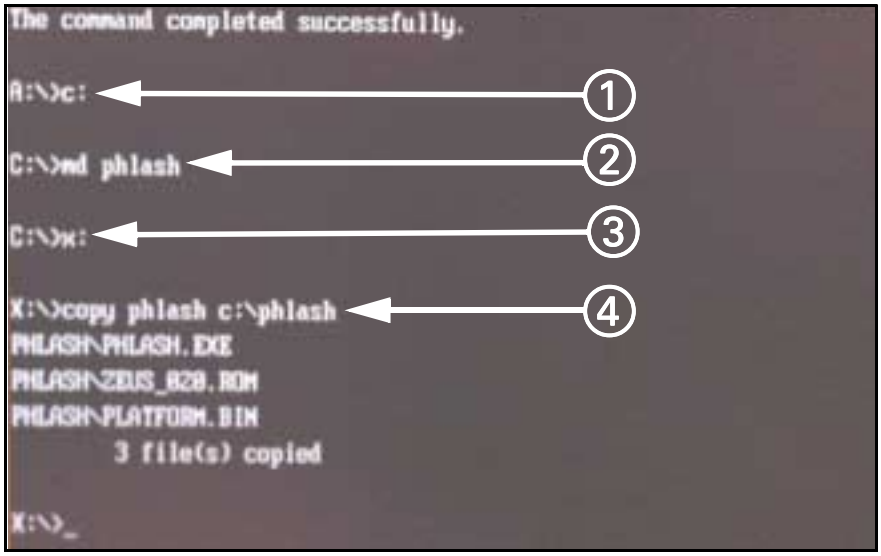

Figure 9-2 DOS Window

3) At DOS A:> Phlash prompt, type **C:** (① in Figure 9-2) and press <*Enter*>.

4) At DOS C:> prompt, type **md∧phlash** (② in Figure 9-2) and press <*Enter*>.

   Note: If message "A subdirectory or file phlash already exists" appears, press <*Enter*>.

5) At DOS C:> prompt, type **x:** (③ in Figure 9-2) and press <*Enter*>.

6) At DOS X:> prompt, type **copy∧phlash∧c:\phlash** (④ in Figure 9-2) and press <*Enter*>.

   Note: If message "Overwrite C:\PHLASH\PHLASH.Exe (Yes/NO/All) appears, type **A** and press <*Enter*>.

7) Verify that the following files scroll up the screen:

   - Phlash\Phlash.exe
   - Phlash\Zeus_XXX.rom
   - Phlash\platform.bin

   3 file(s) copied

8) At DOS X:> prompt, press Ctrl+Alt+Delete keys to reboot system.

9) Press *F2* key and set BIOS for Hard drive boot. See step 2 and 3 of Section 8.4.

10) Complete MDS Hard Drive Phlash Procedure. See Section 9.3.

9.2.2 Download Setup Procedure

For Phlash upgrade using Electronic format go to TD Website (www-td.med.siemens.de).

1) Select Product Information→EM System→PCS→ Software PCS→ MDS. Download MDS Phlash directory from TD website and save files to Service Laptop "C:\phlash" directory.

2) Configure laptop for network boot according to Section 8.1 through step 7 of Section 8.4.

Note: In Section 8.1.2, configure file sharing for (C:) drive instead of CDROM drive. At step 3 of Section 8.1.2 type **C** in "Share Name" box.

3) At MDS DOS A:> Phlash prompt type **C:** (① in Figure 9-2) and press <*Enter*>.

4) At MDS DOS C:> prompt, type **md^phlash** (② in Figure 9-2) and press <*Enter*>.

   Note: If message "a subdirectory or file phlash already exists" appears, press <*Enter*>.

5) At MDS DOS C:> prompt, type **x:** (③ in Figure 9-2) and press <*Enter*>.

6) At MDS DOS X:> prompt, type **copy^phlash^c:\phlash** (④ in Figure 9-2) and press <*Enter*>.

   Note: If message "Overwrite C:\PHLASH\PHLASH.Exe (Yes/NO/All) appears, type **A** and press <*Enter*>.

7) Verify that the following files scroll up the screen:

   - Phlash\Phlash.exe
   - Phlash\Zeus_XXX.rom
   - Phlash\platform.bin

   1 file(s) copied

8) At DOS X:> prompt, Ctrl+Alt+Delete keys to reboot system.

9) Press F2 key and set BIOS for Hard drive boot (see step 2 and step 3 of Section 8.4).

10) Complete MDS Hard Drive Phlash Procedure. See Section 9.3.

9.3 MDS Hard Drive Phlash Procedure

1) Configure laptop for network boot according to Section 8.1 through step 9 of Section 8.4.

2) Use MDS keyboard Up/Down arrows, if necessary, to Select *Boot to network login*.

3) Press <*Enter*>, then immediately press and hold F5 key.

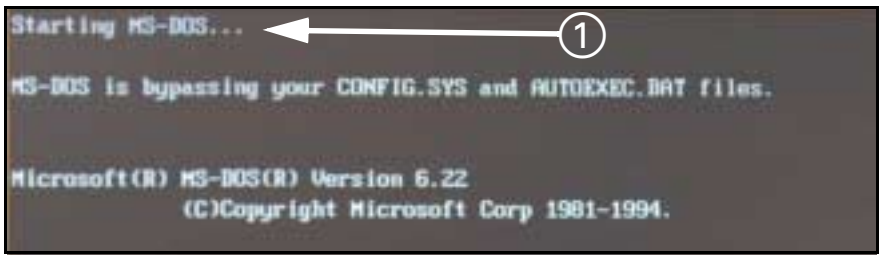

Figure 9-3 Boot window

4) Release F5 key when message "Starting MS-DOS...." appears (see ① in Figure 9-3).

5) Verify that message "MS-DOS is bypassing your config.sys and autoexec.bat files" is displayed. If message is not displayed reboot MDS by pressing the Ctrl+Alt+Delete keys, then repeat step 2 through 4 until message is displayed.

6) At A:\> prompt type **C:** and press <*Enter*>.

7) At C:> prompt, type **cd^phlash** and press <*Enter*>.

8) At C:> PHLASH prompt, type **dir** and press <*Enter*>.

9) Verify that the following files appear in the phlash directory:

   - Phlash.exe
   - Platform.bin
   - Zeus_XXX.ROM

   Note: XXX indicates this ROM update version (e.g xxx=020 for ROM).

10) At C:> PHLASH prompt, type **phlash∧zeus∧XXX.rom** (where xxx=ROM version displayed in step 9) and press <*Enter*>.

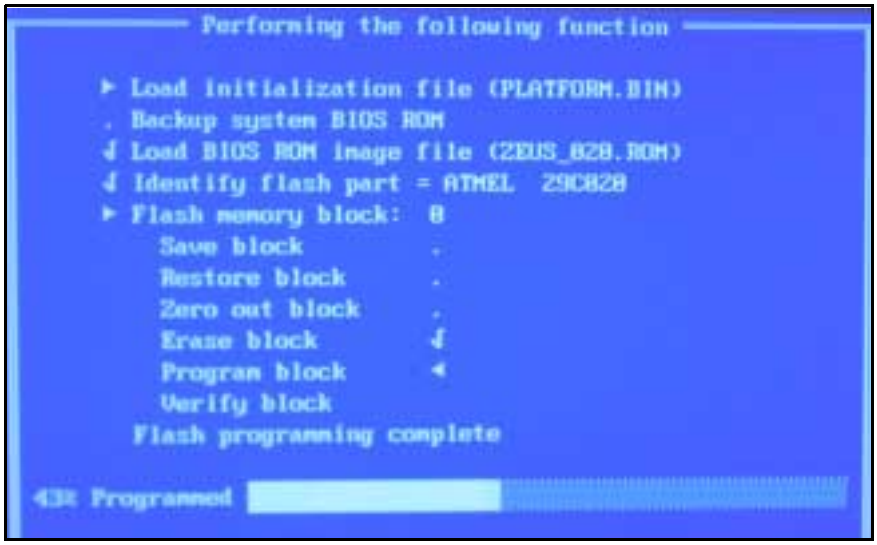

Figure 9-4 Phlash program

11) Verify that Phlash program begins loading new BIOS version (see Figure 9-4).

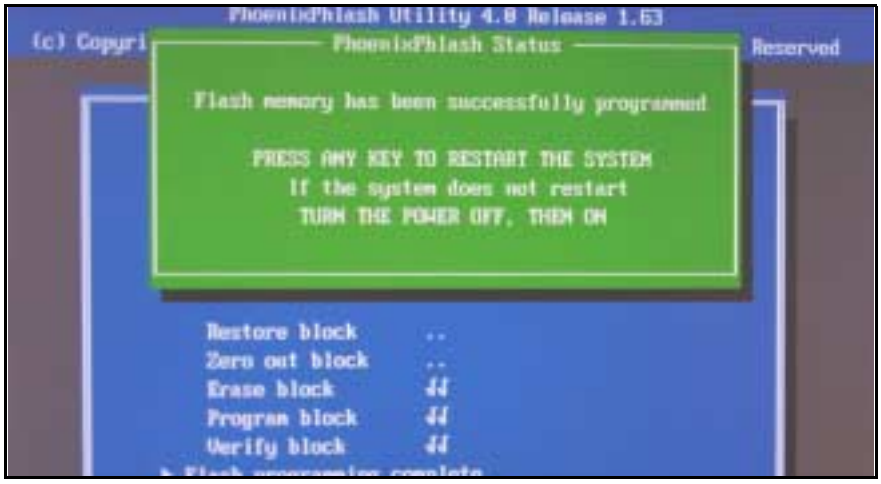

Figure 9-5 Phlash window

12) Once Phlash program is completed, verify message "Phlash memory has been successfully programmed" is displayed in PhoenixPhlash Status box (see Figure 9-5).

   Note: If message is not displayed, repeat steps 1-11.

13) Power-down MDS.

14) Power-up MDS and press and hold *F2* key until BIOS screen appears.

15) At "Main" tab of PhoenixBIOS Setup Utility screen, verify that new BIOS version is displayed at right side of "BIOS Version:".

16) Press *F9* key, and then press <*Enter*> to install BIOS default settings.

17) Press *F10* key, and then press <*Enter*> to save and exit BIOS.

10 Replacement Procedures

Caution:

The MDS contains PC boards that can be affected by static discharge. Work in a static-protected environment.

10.1 Opening MDS

1) Remove all cables attached to MDS.

Figure 10-1 MDS top view

2) Set MDS upright on clean surface.

3) Remove and save 6 Phillips-head screws (① in Figure 8-30) that hold top cover to MDS.

4) Remove top cover and set aside.

5) Set MDS upside down on clean surface.

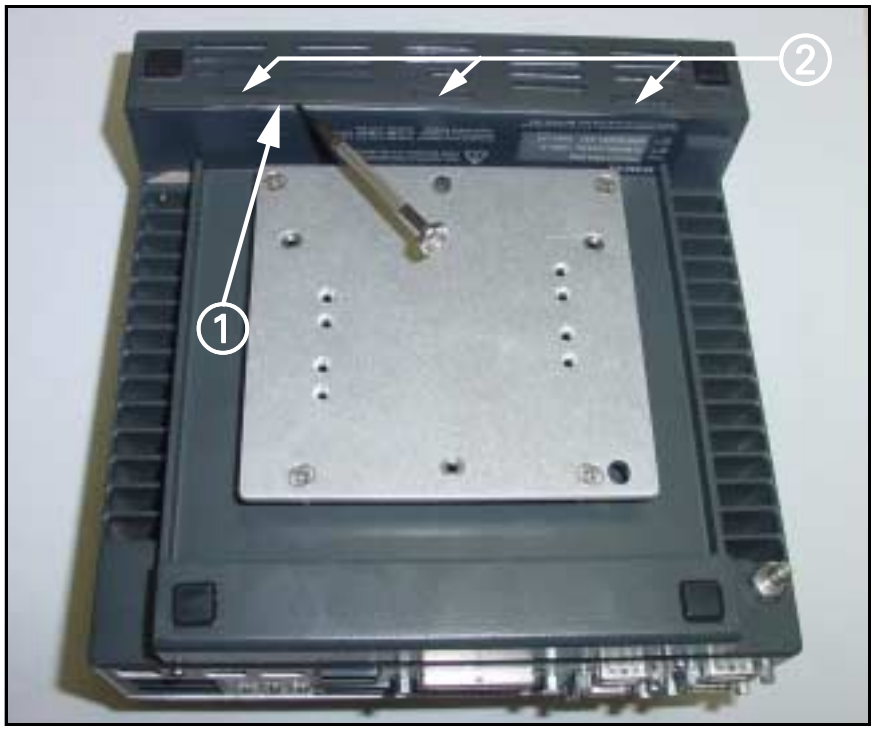

Figure 10-2 MDS (bottom view)

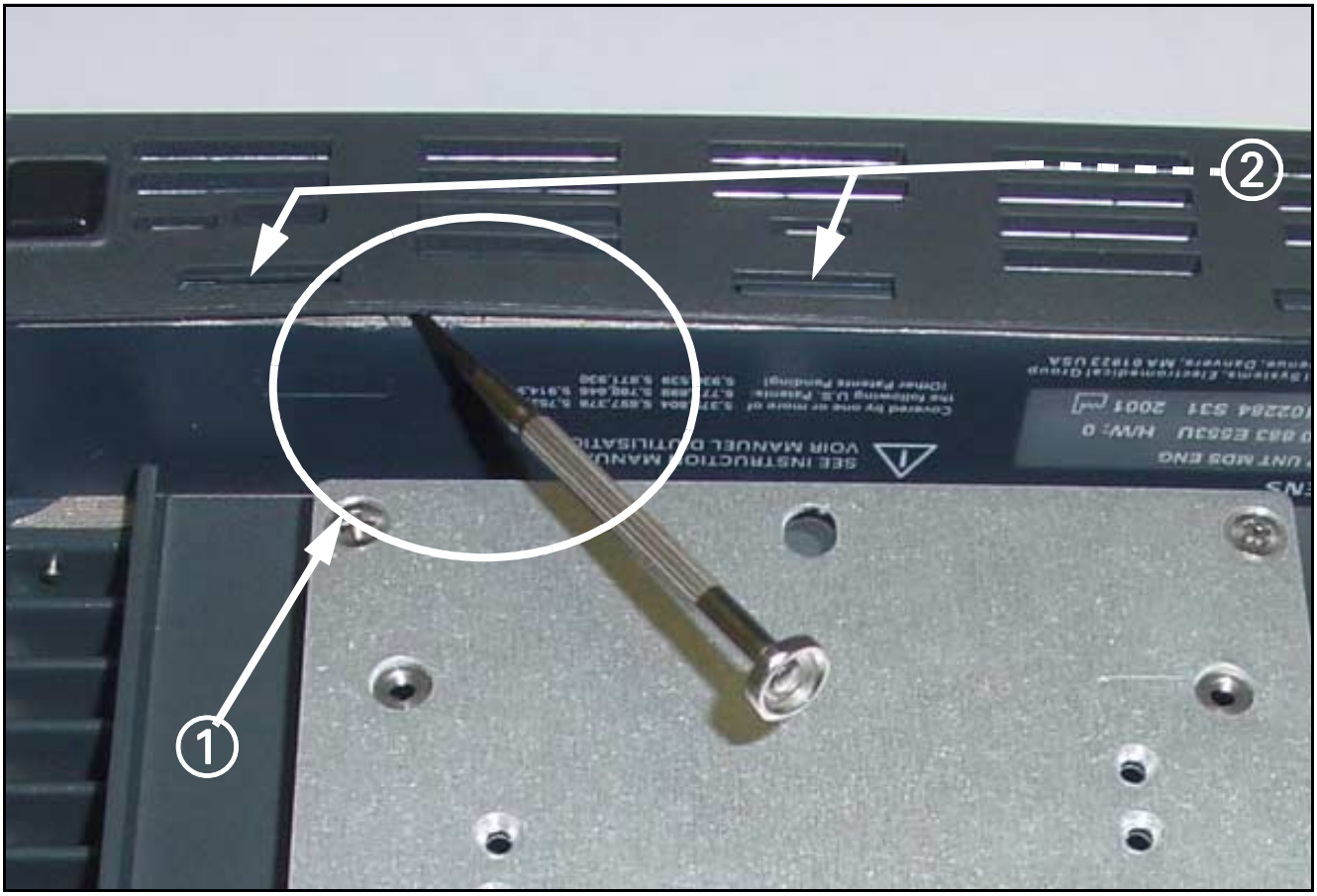

Figure 10-3 MDS exploded bottom view front panel

6) Insert small blade screwdriver between front panel and chassis of MDS (as shown at ① in Figure 8-31 and in Figure 8-32 "exploded view"), close to each of three panel locking tabs indicated by ② in Figure 8-31, and carefully lift up on screwdriver to release front panel from each locking tab (② in Figure 8-31 and in Figure 8-32 "exploded view"), and then pull front panel out so that tabs cannot reset.

7) Remove and set front panel aside.

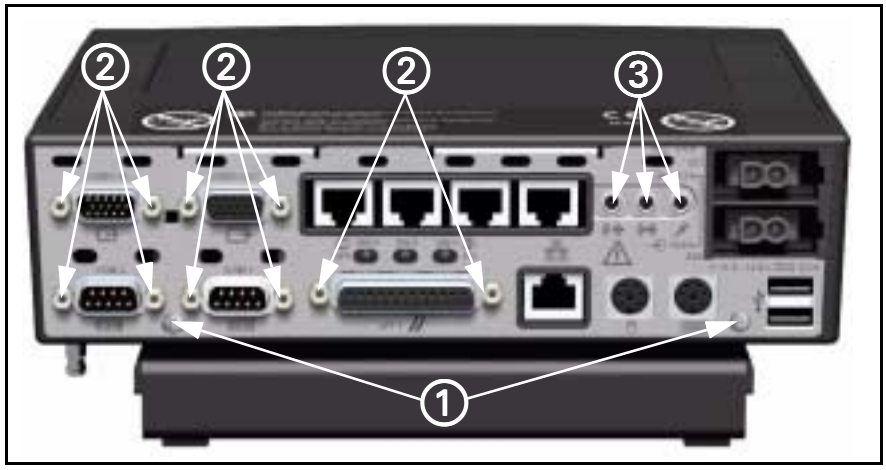

Figure 10-4 MDS (rear view)

8) Set MDS upright on clean surface.

9) Remove and save 2 Phillips-head screws (① in Figure 8-33), ten posts (② in Figure 8-33) and three nuts on auxiliary jacks (③ in Figure 8-33) that secure rear panel to MDS.

10) Remove rear panel and set aside.

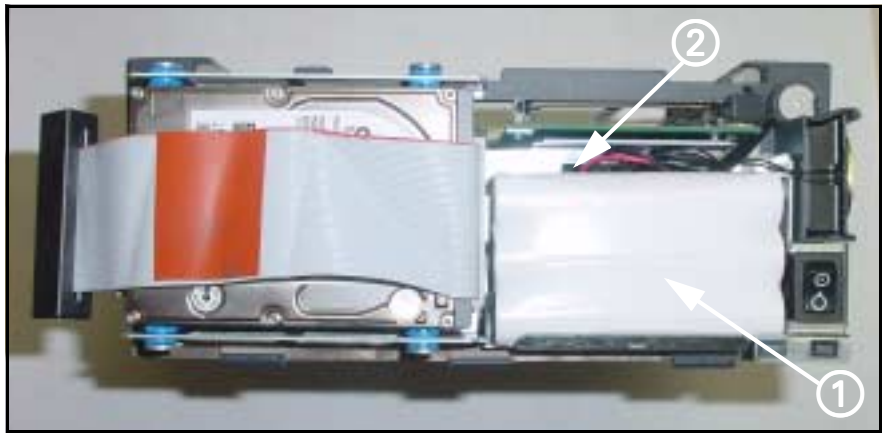

Figure 10-5 Front Panel battery

10.2Replacing Battery

11) Lift up and then pull battery (① in Figure 8-34) out of front panel housing to gain access to battery connector (② in Figure 8-34).

12) Pull out battery connector, and then remove and set battery aside.

Note: Note polarity of battery cable for reference when reassembling MDS.

10.3 Replacing Hard Drive

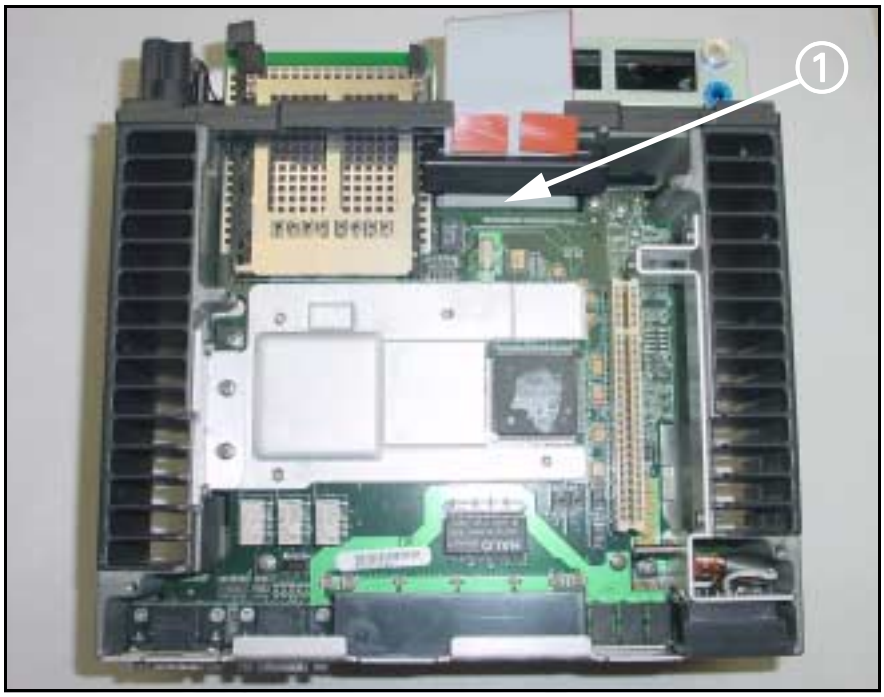

Figure 10-6 MDS (top cover removed)

1) Set MDS upright on clean surface.
2) Unplug ribbon cable connector (① in Figure 10-6) from motherboard, and fold back.

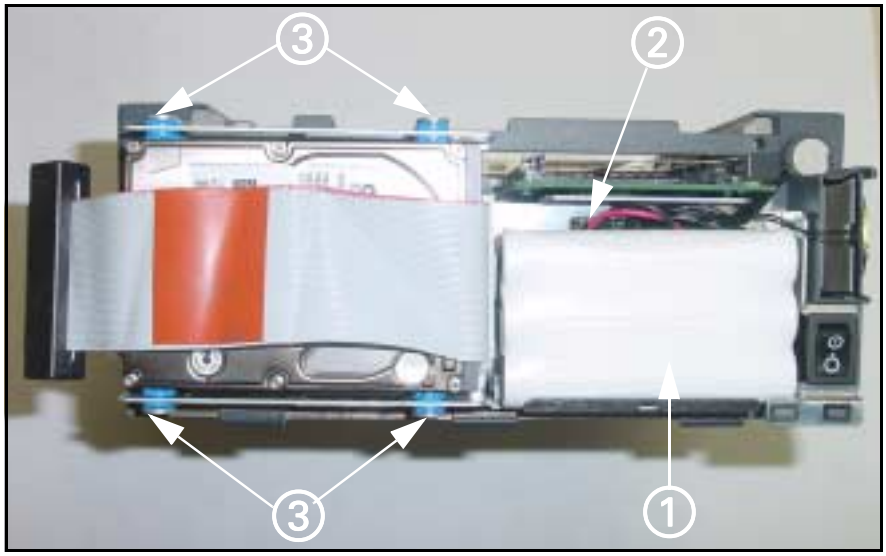

Figure 10-7 MDS (front view)

3) Remove and save 4 Phillips-head screws and sleeves (③ in Figure 10-7) that secure primary hard drive to top and bottom of front housing.
4) Remove hard drive from front housing, disconnect ribbon cable, and set hard drive on flat clean surface.
5) Align pins on hard drive to ribbon cable connector, and carefully press into place.

Note: Ribbon cable connector is keyed and can only be inserted on the hard drive in one orientation.

6) Insert hard drive into front housing and secure with screws removed in step 5 above.

7) Follow procedure of Section 10.3 in reverse order to reassemble MDS, and then proceed to Section 10.5.

10.4 Replacing Memory / Daughterboard

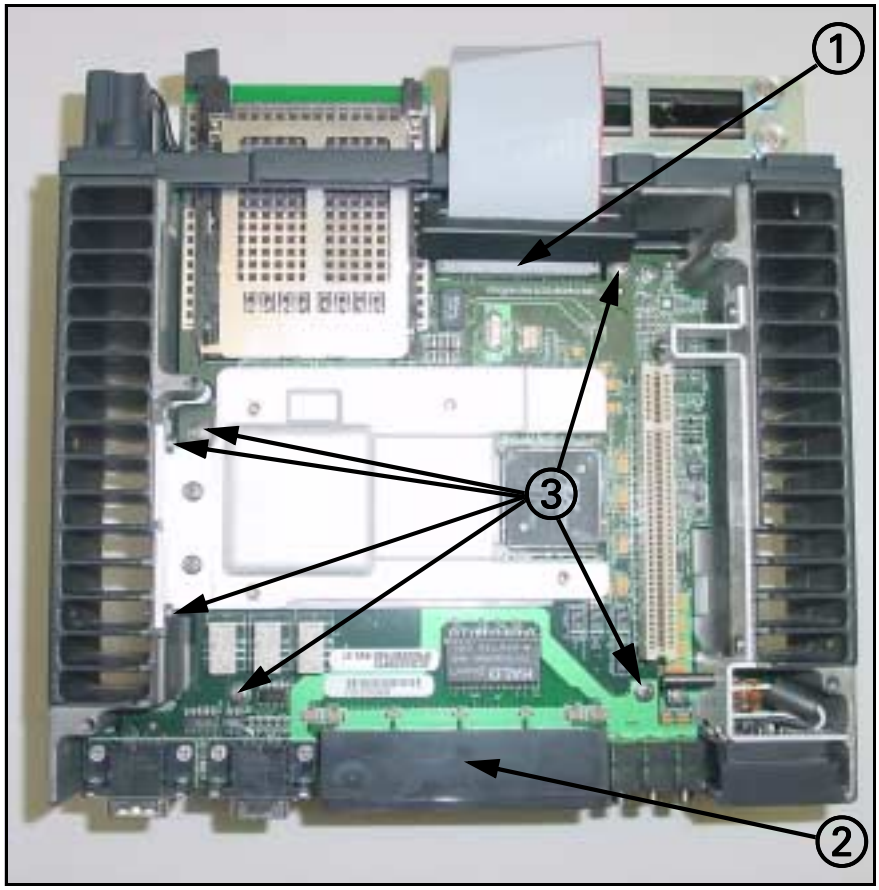

Figure 10-8 MDS (top cover removed)

1) Unplug ribbon cable connector (① in Figure 10-8) from mother board, and fold back.

2) Remove and save plastic ethernet cover (② in Figure 10-8).

3) Remove and save 6 Phillips-head screws (③ in Figure 10-8) that secure daughter board to mother board.

4) Lift daughter board up to separate from mother board, slide board slightly to right to separate from PCMCIA guide slot, and then pull board toward rear of MDS to remove board.

5) Do either a or b as appropriate.

   a) If replacing daughter board, locate replacement board in position on MDS and perform steps 1 - 4 above in reverse to reassemble unit. Then proceed to Section 10.5.

   b) If replacing memory module, go to step 6.

.

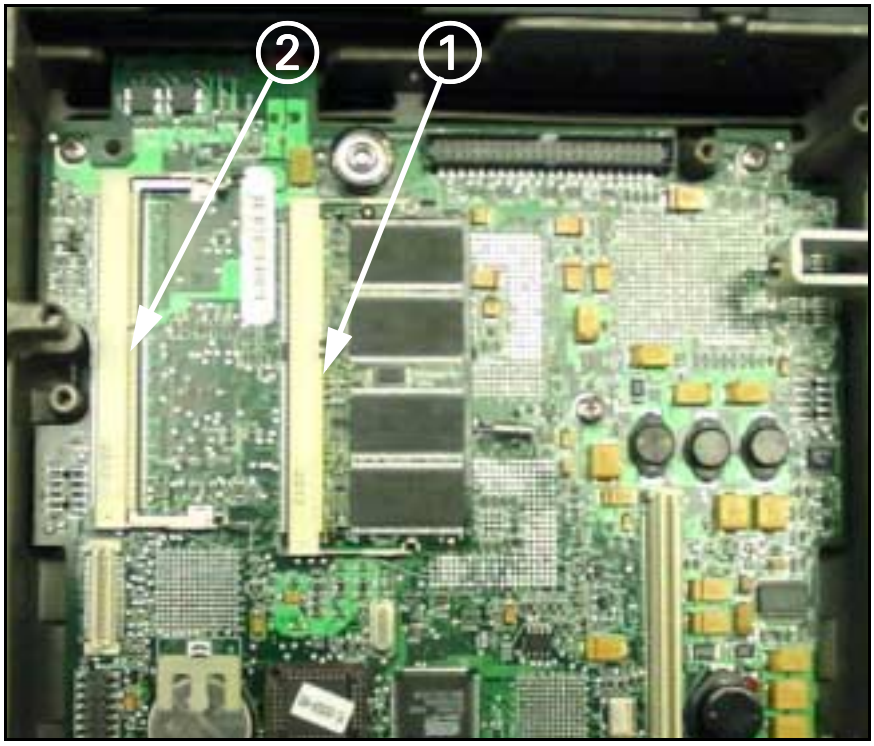

Figure 10-9 Memory slots

6) Lift defective memory module ① or ② (not installed in Figure 10-9) out of memory slot and remove module.

7) Align pins on replacement memory module to connector on motherboard (① or ② in Figure 10-9).

8) Carefully seat memory module into connector, and then press down to lock into place.

   Note: Memory module is slotted and can only be inserted in only one orientation, and snaps into place when properly installed.

9) Locate daughter board in position on MDS and perform steps 1 through step 4 above in reverse to reassemble unit.

10) Proceed to Section 10.5.

10.5 Closing MDS

1) Set MDS upright on clean surface.

2) Align screw holes on rear panel to screw holes on back of MDS.

3) Insert and tighten 2 Phillips-head screws removed in step 8 of Section 10.1.

4) Insert and tighten 10 post removed in step 9 of Section 10.1.

5) Insert and tighten 3 nuts removed in step 10 of Section 10.1.

6) Extend PCMCIA eject button out, so that front panel can be installed.

7) Align tab slots on front panel to tabs on bottom of MDS, and carefully press front panel into place.

   Note: Tabs snap into place when properly installed.

8) Align screw holes on top cover to screw holes on MDS.

9) Insert and tighten 6 Phillips-head screws removed in step 3 of Section 10.1.

10) Proceed to Section 11,

11 Functional Check

The following procedures check the MDS's hard drive, memory, power circuits, power-up sequence, power indicator, and software. Begin the procedure with the MDS powered off. Record all values in "Functional Verification Checklist" on page 45. Retain a copy of test results with your records.

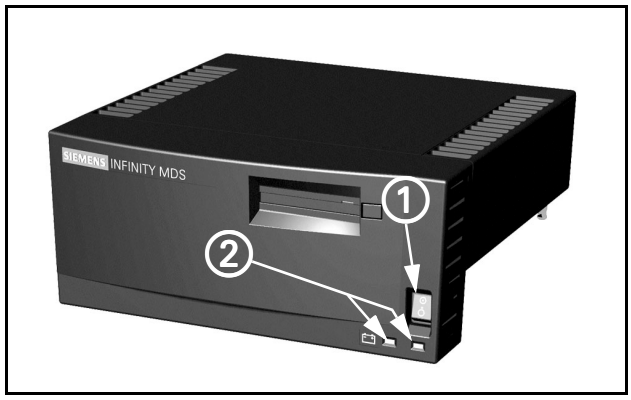

Figure 10-10 MDS (front view)

1) Connect cables removed from MDS during step 1 of Section 2.1

2) Power up MDS, and press and hold down F2 key to enter BIOS setup.

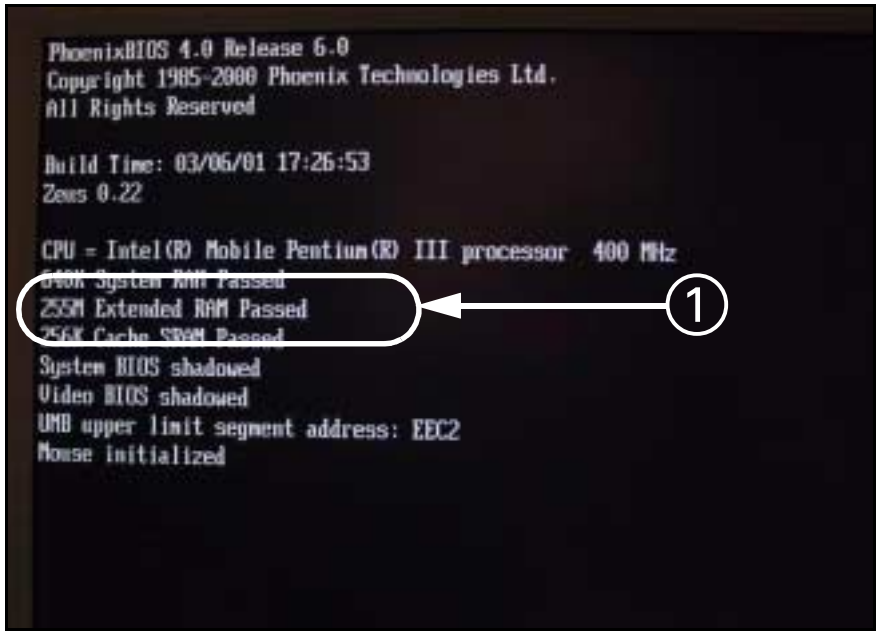

Figure 10-11 Boot-Up Self-Test Screen

3) During boot up, verify memory test passes (① in Figure 10-11).

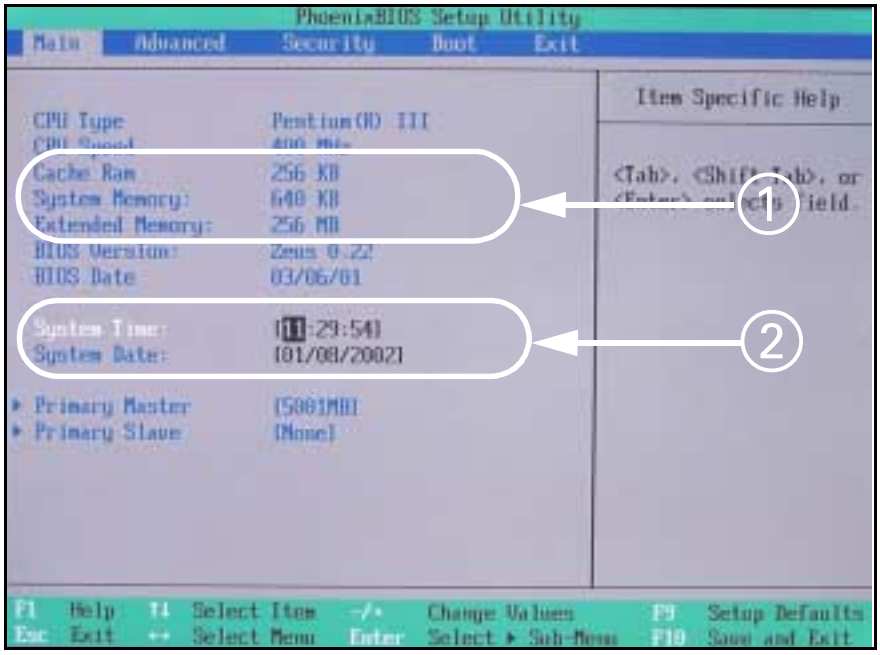

Figure 10-12 PhoenixBios Utility Screen

4) At "MAIN" tab of PhoenixBIOS setup utility screen verify the following:

   4.1) Cache Ram, System Memory and Extended memory are as shown by ① in Figure 10-12.

   4.2) Primary Master drive capacity is displayed (② in Figure 10-12).

5) Press F10 key then press <Enter> to save and exit PhoenixBIOS Utility menu.

6) Verify two power LED's on front panel illuminate green (② in Figure 10-10), Medside Data Station emits a brief tone, and monitor display begins boot sequence.

7) Verify MDS boots to Windows logon screen.

8) At Window 2000 logon window, press Ctrl+Alt+Delete to Login.

9) Click on *OK* at Login information windows to boot to "MAIN" screen.

   Note: Do not enter name or password.

10) Verify that correct language appears on Windows 2000 Workstation main screen.

11) Perform leakage current test and functionally verify proper operation of reassembled MDS before returning MDS to clinical service. Proceed to Section 12.

12 Leakage Current Test

Leakage current tests assure that under both normal and fault conditions, any leakage current does not exceed values given in Table 4.

1) Perform leakage test with MDS power supply plugged into leakage tester. See Figure 10-13.

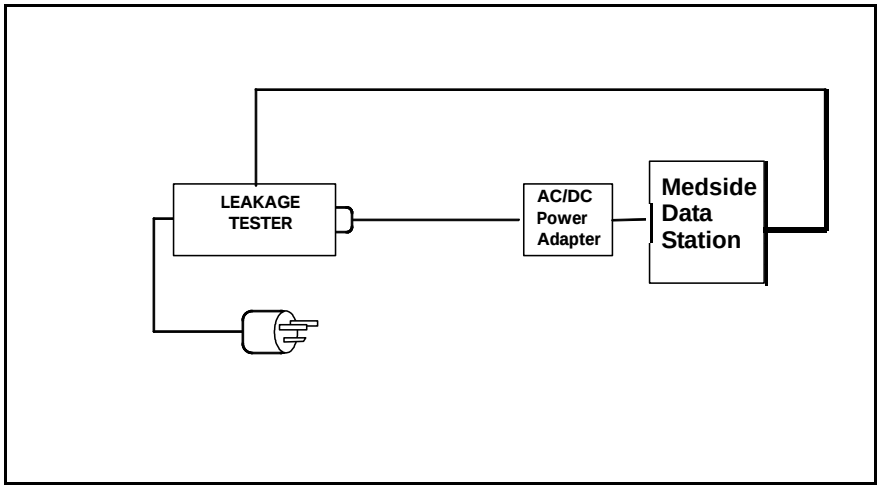

Figure 10-13 MDS Earth leakage current test setup

2) Follow leakage tester manufacture's instructions to measure each of leakage currents given in Table 4.
   - Earth leakage
   - Enclosure leakage (case)

Table 4: Leakage Current Test

TEST	Max. Current
Earth Leakage	.5ma@240VAC .250ma@120VA
Enclosure leakage (case)	.1ma@240VAC .05ma@120VAC

3) Verify that current does not exceed values given in Table 4.

4) Record all values in "Functional Verification Checklist" on page 45

Functional Verification Checklist

Site: _____ Date: _____Technician: _____

Location: _____MDS Serial Number: _____Installed SW Version: _____

File a copy of this report with site documentation, and retain a copy for your records. The Siemens LG may also require a copy of these test results. For MDS's serviced in U.S.A., also forward copy of completed Functional Verification Checklist per applicable SSG installation procedure.

✔ = Test Passed

Memory Test _____

Cache Ram, System Memory and Extended Memory _____

Primary Master Drive _____

During Boot

- Front Panel LED's illuminated _____
- MDS emits brief tone _____

MDS boots to Windows 2000 logon screen _____

Correct language displayed _____

Leakage Current Test

- Earth leakage _____
- Enclosure leakage (case) _____

MDS has passed all required tests.

_____ _____ _____

Name Printed Signature Date

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Appendix A: Spare Parts

Table 4-1 Spare Parts

Part Art. No.	Part Name	Dwg. Ref.
72 59 257 E553U	Drive Cable	Figure A-1 on page 48
74 98 616 E553U	128M Memory Module	Figure A-2 on page 48
72 59 869 E533U	E/M ASY CBL FRNT PANEL MDS	Figure A-3 on page 48
72 62 046 E553U	PCB ASY Daughterboard	Figure A-4 on page 49
72 59 307 E553U	Battery Module	Figure A-5 on page 49
72 58 812 E553U	MEC PRT CVR Front MDS	Figure A-6 on page 50
72 59 851 E553U	E/M SPR PWR MDS	Figure A-7 on page 50
72 65 619 E553U	E/M SPR MDS Hard Drive	Figure A-8 on page 50

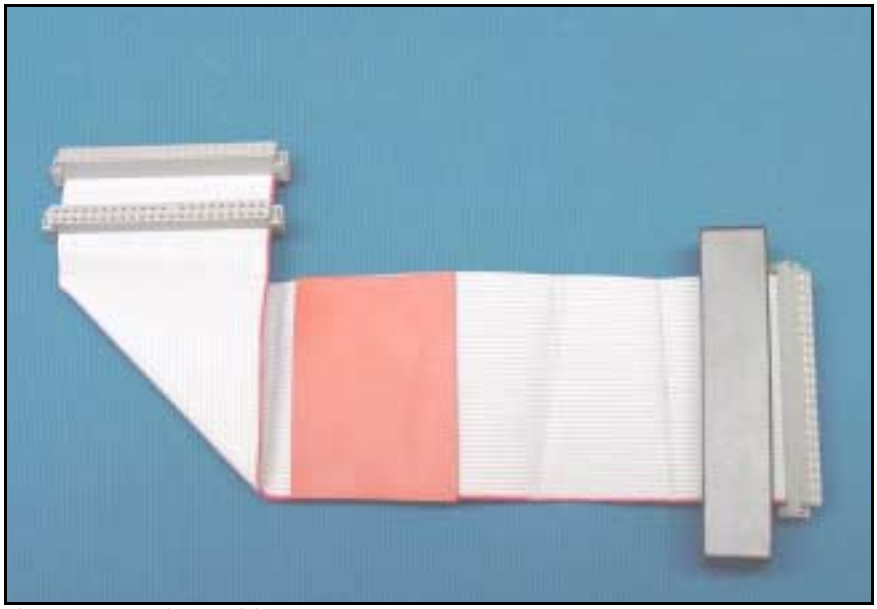

Figure A-1 Drive Cable

Figure A-2 128M Memory Module

Figure A-3 E/M ASY CBL FRNT PANEL MDS

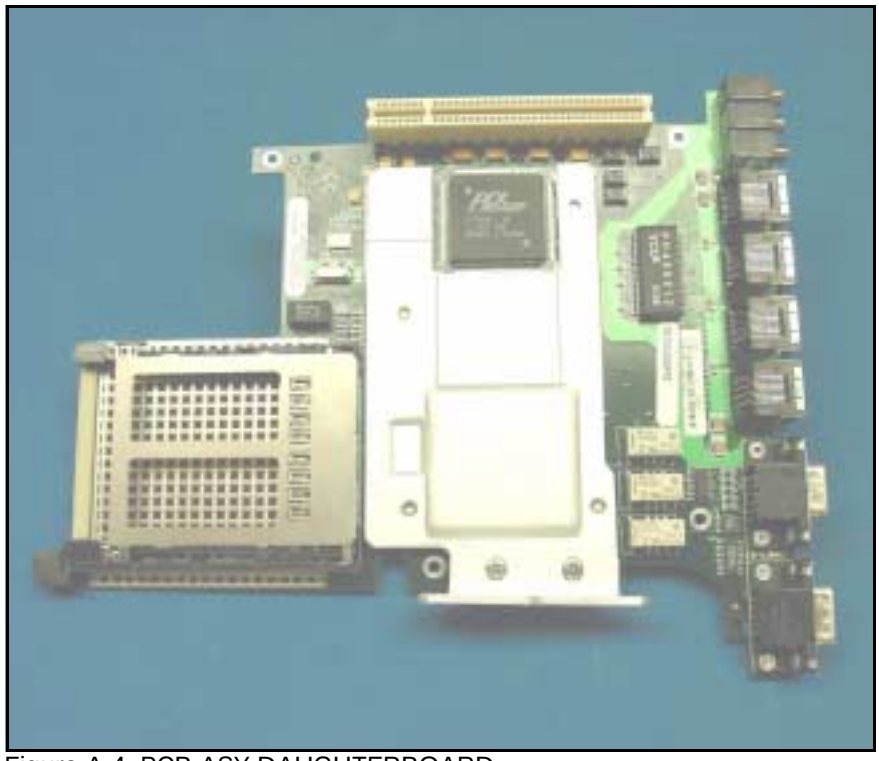

Figure A-4 PCB ASY DAUGHTERBOARD

Figure A-5 Battery Module

Figure A-6 MEC PRT CVR FRONT MDS

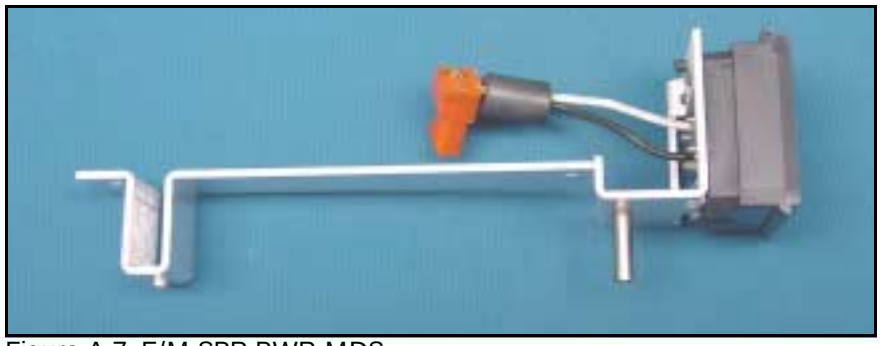

Figure A-7 E/M SPR PWR MDS

Figure A-8 E/M SPR MDS HARD DRIVE

Appendix B: BIOS Messages

The following is a list of the messages that the BIOS displays. Most error messages occur during POST test. See “Appendix C: POST Error Codes” on page 55. Some messages display information about a hardware device, e.g., the amount of memory installed. Other messages may indicate a problem with a device, such as the way it has been configured. The following list of messages includes explanations of error messages and possible remedies for reported problems.

*If your system displays one of the messages marked below with an asterisk (*), write down the message and contact TSS Danvers or TSS Solna. If the MDS fails after making changes in the BIOS Setup menus, reset the computer, enter BIOS Setup and verify Setup (see Section 8) to correct the error.

0200 Failure Fixed Disk

Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run BIOS Setup. Find out if the fixed-disk type is correctly identified (see Section 2.1).

0210 Stuck key

Stuck key on keyboard.

0211 Keyboard error

Keyboard not working.

***0212 Keyboard Controller Failed**

Keyboard controller failed test. May require replacing keyboard controller.

0213 Keyboard locked - Unlock key switch

Unlock the system to proceed.

0220 Monitor type does not match CMOS - Run SETUP

Monitor type not correctly identified in Setup

***0230 Shadow Ram Failed at offset: nnnn**

Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.

***0231 System RAM Failed at offset: nnnn**

System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.

***0232 Extended RAM Failed at offset: nnnn**

Extended memory not working or not configured properly at offset **nnnn.**

***0250 System battery is dead - Replace and run SETUP**

The CMOS clock battery indicator shows the battery is dead.

0251 System CMOS checksum bad - Default configuration used

System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter correct values (see Section 2.2). If the error persists, contact TSS Danvers/Solna.

***0260 System timer error**

The timer test failed. Requires repair of system board.

***0270 Real time clock error**

Real-Time Clock fails BIOS hardware test. May require board repair.

0271 Check date and time settings

BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991- 2099).

0280 Previous boot incomplete - Default configuration used

Previous POST did not complete successfully. POST loads default values and offers to run BIOS Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the wait-state configuration is correct. This error is cleared the next time the system is booted.

***0281 Memory Size found by POST differed from CMOS**

Memory size found by POST differed from CMOS.

***02B2 Incorrect Drive A type - run SETUP**

Type of floppy drive A: not correctly identified in Setup. Contact TSS Danvers/Solna.

***02B3 Incorrect Drive B type - run SETUP**

Type of floppy drive B: not correctly identified in Setup. Contact TSS Danvers/Solna.

02D0 System cache error - Cache disabled

RAM cache failed and BIOS disabled the cache. A disabled cache slows system performance considerably. Contact TSS Danvers/Solna.

***02F0: CPU ID:**

CPU socket number for Multi-Processor error.

***02F4: EISA CMOS not writeable**

ServerBIOS2 test error: Cannot write to EISA CMOS.

***02F5: DMA Test Failed**

ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.

***02F6: Software NMI Failed**

ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

***02F7: Fail-Safe Timer NMI Failed**

ServerBIOS2 test error: Fail-Safe Timer takes too long.

Device Address Conflict

Address conflict for specified **device.**

Allocation Error for: device

Run ISA or EISA Configuration Utility to resolve resource conflict for the specified device.

***CD ROM Drive**

CD ROM Drive identified.

Entering SETUP...

Starting Setup program

***Failing Bits: nnnn**

The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.

Fixed Disk n

Fixed disk **n** (0-3) identified.

Invalid System Configuration Data

Problem with NVRAM (CMOS) data.

I/O device IRQ conflict

I/O device IRQ conflict error.

PS/2 Mouse Boot Summary Screen:

PS/2 Mouse installed.

nnnn kB Extended RAM Passed

Where **nnnn** is the amount of RAM in kilobytes successfully tested.

nnnn Cache SRAM Passed

Where **nnnn** is the amount of system cache in kilobytes successfully tested.

nnnn kB Shadow RAM Passed

Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.

nnnn kB System RAM Passed

Where **nnnn** is amount of system RAM in kilobytes successfully tested.

One or more I2O Block Storage Devices were excluded from the Setup Boot Menu

There was not enough room in the IPL table to display all installed I_2O block-storage devices.

Operating system not found

Operating system cannot be located on drive C:. Enter Setup and see if fixed disk properly identified.

***Parity Check 1 nnnn**

Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.** Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

Parity Check 2 nnnn

Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **???.**

Press <F1> to resume, <F2> to Setup, <F3> for previous

Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option** ROM, i.e., an add-on card). Write down and follow the information shown on the screen.

Press <F2> to enter Setup

Optional message displayed during POST.

PS/2 Mouse:

PS/2 mouse identified.

Run the I2O Configuration Utility

One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).

System BIOS shadowed

System BIOS copied to shadow RAM.

UMB upper limit segment address: nnnn

Displays the address *nnnn* of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.

Video BIOS shadowed

Video BIOS successfully copied to shadow RAM.

Appendix C: POST Error Codes

Recoverable POST Errors

Whenever a recoverable error occurs during POST, PhoenixBIOS displays an error message describing the problem.

Terminal POST Errors

There are several POST routines that issue a **POST Terminal Error** message and shut down the system if the routines fails. Before shutting down the system, the terminal-error handler issues a beep code signifying the test point error, writes the error to port 80h, attempts to initialize the video, and writes the error in the upper left corner of the screen (using both mono and color adapters).

Test Point Error Code

At the beginning of each POST routine, the BIOS outputs the test point error code to I/O address 80h. Use this code during trouble shooting to establish at what point the system failed and what routine was being performed. If external hardware error is displayed, (eg.mouse, keyboard, etc.) Check external hardware and hardware connections, then reboot MDS. If other errors are displayed, write down error code and contact TSS Danvers/Solna. If the BIOS detects a terminal error condition, it halts POST and attempts to display the error code on upper left corner of the screen.

If the system hangs before the BIOS can process the error, the value displayed at the port 80h is the last test performed. In this case, the screen does not display the remaining error code.

The following is a list of the checkpoint codes displayed and written at the start of each test, and the beep codes issued for terminal errors. Unless otherwise noted, these codes are valid for PhoenixBIOS 4.0 Release 6.x.

Table 5 Checkpoint codes

Code	POST Routine Description
02h	Verify Real Mode
03H	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from ROM
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize cache to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with values POST values
12h	Restore CPU control word during warm boot
13h	Initialize PCI Bus Mastering devices
14h	Initialize keyboard controller

Table 5 Checkpoint codes

16h	BIOS ROM checksum
17h	Initialize cache before memory Auto size
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	Test DRAM refresh
22h	Test 8742 keyboard controller
24h	Set ES segment register to 4 GB
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512kb base RAM
2Ch	RAM failure on address line xxxx
2EH	RAM failure on address line xxxx* of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternative registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	Check ROM copyright notice
47h	Initialize I20 support
48h	Check video configuration against CMOS
49h	Initialize PCI bus devices and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test Keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	Test for unexpected interrupts
59h	Initialize POST display
5Ah	Display prompt “Press F2 to enter SETUP”
5Bh	Display CPU cache
5Ch	Test RAM between 512 and 640 kb
60h	Test extended memory

Table 5 Checkpoint codes

62h	Test extended memory address line
64h	Jump to User Patch1
66h	Configure advanced cache register
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SSM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Setup hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable on board Super I/O ports and IRQ's
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC compatible PnP ISA devices
86h	Re-initialize on board I/O ports
87h	Configure Motherboard Devices
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMI's)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
97h	Fix up Multi Processor table
98h	Search for optional ROM's. One long, two short beeps on checksum failure
99h	Check for SMART drive (optional)
9Ah	Shadow option ROM"s
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts

Table 5 Checkpoint codes

9Fh	Determine number of ATA and SCSI's drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter Setup
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROM"s
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard
CBh	Redirect Int 13h to Memory Technology Devices such as ROM,RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt
	The following are for boot block in Flash ROM
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O

Table 5 Checkpoint codes

E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output One beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

* If BIOS detects error code 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (*xxxx*) address line after the error code. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in lower 16 bits.

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